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THESIS

EXTERNAL AND INTERNAL FACTORS SHAPING
THE JAPAN MARITIME SELF-DEFENSE FORCE
(JMSDF)

by

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June, 1993

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93 0 37 125

93-20416



Unclassified

Security Classification of this page

REPORT DOCUMENTATION PAGE				
1a Report Security Classification: Unclassified		1b Restrictive Markings		
2a Security Classification Authority		3 Distribution/Availability of Report Approved for public release; distribution is unlimited.		
2b Declassification/Downgrading Schedule				
4 Performing Organization Report Number(s)		5 Monitoring Organization Report Number(s)		
6a Name of Performing Organization Naval Postgraduate School	6b Office Symbol (if applicable) AS	7a Name of Monitoring Organization Naval Postgraduate School		
6c Address (city, state, and ZIP code) Monterey CA 93943-5000		7b Address (city, state, and ZIP code) Monterey CA 93943-5000		
8a Name of Funding/Sponsoring Organization	8b Office Symbol (if applicable)	9 Procurement Instrument Identification Number		
Address (city, state, and ZIP code)		10 Source of Funding Numbers Program Element No Project No Task No Work Unit Accession No		
11 Title (include security classification) EXTERNAL AND INTERNAL FACTORS SHAPING THE JAPAN MARITIME SELF-DEFENSE FORCE (JMSDF)				
12 Personal Author(s) Shinji Tsukigi				
13a Type of Report Master's Thesis	13b Time Covered From To	14 Date of Report (year, month, day) 1993 June 17	15 Page Count 91	
16 Supplementary Notation The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
17 Cosati Codes		18 Subject Terms (continue on reverse if necessary and identify by block number) Japan Maritime Self-Defense Force		
Field	Group	Subgroup		
19 Abstract (continue on reverse if necessary and identify by block number) This thesis examines factors shaping the Japan Maritime Self-Defense Force (JMSDF). It focuses on issues concerning Japan's financial resources to improve the JMSDF in the future and the level of complementarity between the JMSDF and the U.S. Navy. The examination reveals that there is a high level of complementarity overall between the JMSDF and the U.S. Pacific Fleet. This relationship is most likely going to continue into the future. The JMSDF most likely will not have the financial resources it will need to enhance its inventory much beyond its current force level because of the mounting pressure of other domestic budgetary needs and a lower expected Gross National Product (GNP) rate of growth. It is concluded that the future direction of the JMSDF will be that of keeping an effective complementary relationship with that of the U.S. Navy.				
20 Distribution/Availability of Abstract <input checked="" type="checkbox"/> unclassified/unlimited <input type="checkbox"/> same as report <input type="checkbox"/> DTIC users	21 Abstract Security Classification Unclassified			
22a Name of Responsible Individual Katsukiaki L. Terasawa	22b Telephone (include Area Code) (408) 656-2463	22c Office Symbol AS/TK		

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External and Internal Factors Shaping
the Japan Maritime Self-Defense Force
(JMSDF)

by

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Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL

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ABSTRACT

This thesis examines factors shaping the Japan Maritime Self-Defense Force (JMSDF). It focuses on issues concerning Japan's financial resources to improve the JMSDF in the future and the level of complementarity between the JMSDF and the U.S. Navy.

The examination reveals that there is a high level of complementarity overall between the JMSDF and the U.S. Pacific Fleet. This relationship is most likely going to continue into the future. The JMSDF most likely will not have the financial resources it will need to enhance its inventory much beyond its current force level because of the mounting pressure of other domestic budgetary needs and a lower expected Gross National Product (GNP) rate of growth.

It is concluded that the future direction of the JMSDF will be that of keeping an effective complementary relationship with that of the U.S. Navy.

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Availability Codes	
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I. INTRODUCTION

A. BACKGROUND

The end of the Cold-War has influenced Japanese and United States (U.S.) defense forces in many respects. Plans for the reduction of the U.S. military have started to take shape. The U.S. Department of Defense publication, "A Strategic Framework for the Asian Pacific Rim: Looking toward the 21st Century," outlines the rearrangement of U.S. military forces. These changes, in turn, are expected to influence the future role of Pacific Rim allies, in particular, the Japan Maritime Self-Defense Force (JMSDF).

B. PURPOSE

The purpose of this thesis is to analyze "external and internal factors shaping the JMSDF."

The primary research questions are: "Does JMSDF have the financial resources to improve its forces in the future?" And "What has been and will be the level of complementarity between the JMSDF and the U.S. Navy?"

C. FRAMEWORK OF THE RESEARCH

1. Outline

There are four parts to this thesis. The first part provides background information and an introduction to this research. The second part examines and analyzes the JMSDF's financial resources for improving its forces. The third part examines and analyzes the level of complementarity between the JMSDF and the U.S. Navy. The final part presents findings and conclusions.

2. Methodology

Data on Japan's national budget, the JMSDF budget, the procurement prices of ships and aircraft, and other information was collected from the Japan Maritime Staff Office in Tokyo. This data was mainly used to conduct analysis as described in the second part of this thesis. Jane's Fighting Ships and Aircraft, 1992-93, data and data from "The Military Balance 1992-1993" (The International Institute for Strategic Studies) were used to conduct a simple statistical comparison in the third part.

3. Scope

Internal factors refer to Japanese domestic matters and external factors refer to matters outside of Japan. In this thesis I examined budgetary matters as one of the internal factors and the relationship between the JMSDF and the U.S. Navy as one of the external factors, because I judged that these factors were the most fundamental factors shaping the JMSDF. Therefore I didn't deal with other internal factors such as Japan's Constitution or other external factors such as Japan's relations with East Asian countries.

II. RESOURCES FOR JMSDF IMPROVEMENT

A. OUTLINE OF JAPAN'S DEFENSE PROGRAM

The defense policy Japan pursues under its constitution is based on the "Basic Policy for National Defense" (see Appendix A) adopted by the National Defense Council and approved by the Cabinet in May 1957. Since 1957, defense buildup plans were put into effect based on this basic policy. Table 1 shows a history and outline of Japan's Defense Program.

At first in order to implement its basic policy, Japan put four Defense Buildup Plans into effect. These plans all stressed the importance of improving the fighting capabilities of the Japan Self-Defense Forces (JSDF) and preparing the military for potential crises (see Appendix B).

With the completion of the Fourth Defense Buildup Plan in FY 1976, the "National Defense Program Outline (NDPO)" was adopted by the National Defense Council and approved by the Cabinet in October 1976.

"The NDPO is based on the concept of basic defense capability. The basic defense capability is aimed at enabling the country to be fully on the alert in peacetime and to effectively counter any limited and small-scale act of aggression."¹

"Since the NDPO was adopted by the Cabinet, the Government has ceased to formulate defense buildup plans covering a fixed period of time as it did before. Instead, it was decided to adopt mainly the so-called 'single fiscal-year

¹Defense of Japan 1991 (Japan Defense Agency) p80

TABLE 1
Outline of Japan's Defense Buildup

FY	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Basic Policy for National Defense										(Adopted on May 20,1957, by the National Defense Council and by the Cabinet)									
--	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--

First Defense Buildup Plan	Second Defense Buildup Plan	Third Defense Buildup Plan	Fourth Defense Buildup Plan
----------------------------	-----------------------------	----------------------------	-----------------------------

1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Basic Policy for National Defense	(Adopted on May 20,1957, by the National Defense Council and by the Cabinet)	(*1)
--	---	--------

National Defense Program Outline	(Adopted on October 29,1976,by the National Defense Council and by the Cabinet)	
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	Mid-Term Defense Program (Adopted on Sep 18,1985,by the Nat'l Defense Council and by the Cabinet)	Mid-Term Defense Program (Adopted on Dec 20,1990,by the Security Council and by the Cabinet)
(*2)	Mid-Term Defense Program Estimate (56 Chugyo)	
(*2)	Mid-Term Defense Program Estimate (53 Chugyo)	

Framework of 1 % of GNP	Framework of Total expense set forth in the program
-------------------------	---

(Adopted on Nov 5,1976,by the National Defense Council and by the Cabinet)	(Adopted on Jan 24,1987,by the Security Council and by the Cabinet)
--	---

(*1) : Basic Policy on Defense Planning in and after FY1991 (Adopted on Dec 19 1990, by the Security Council and by the Cabinet)

(*2) : "Mid-Term Defense Program Estimate" is an intra-department document of the Defense Agency formulated for the purpose of serving as a reference when the Agency draws up its annual defense plan

Note: See Appendix B for brief description of buildup plans

Source: Zusetsu Nihon No Zaisen (Toyokesai Shimpsha) P197

formula' by which a necessary decision is made annually."² Unlike a series of previous Defense Buildup Plans, the estimated total expenditures required to implement the programs were not specified. "There was also a need to reflect a public mood for tighter restrictions on a defense budget that had increased 17.7% in 1970 to 21% in 1975."³ On October 5, 1976, the government decided on a "Defense Buildup for the Time Being," in which placing a ceiling on defense expenditures of 1% of GNP (the so-called framework of 1 percent of GNP) was instituted.

In September 1985, the government formulated the Mid-Term Defense Program to be implemented during the period from FY1986 through FY1990. This was elevated to the status of government plan by subjecting mid-term estimates by the Defense Agency to National Security Council debates for the purpose of ensuring tighter civilian control.

In the process of the compilation of the FY1987 budget, it became certain that defense expenditures exceeded 1% of GNP. Through heated discussions among political parties, the Cabinet finally decided to discard the framework of 1 percent of GNP. Due to a need for a new limit instead of the framework of 1 percent of GNP, in January 1987, the "Defense Buildup for the Future" plan was adopted by the Security Council and approved by the Cabinet (see Appendix C).

With the completion of the Mid-Term Defense Program in FY 1990, the "Basic Policy on Defense Planning in and after FY1991" was adopted by the National Defense Council and approved by the Cabinet on December 19, 1990. This Policy stated that "The decision was based on the judgment that a trend

²Defense of Japan 1982 (Japan Defense Agency) p110

³Managing Defense: Japan's Dilemma (Harrison M. Holland) p49

toward the stability of international relations, on the premise of which the NDPO was formulated, is currently emerging in a more advanced form--and that it is appropriate to continue efforts for defense buildup in line with the basic concept of the NDPO."⁴ In accordance with this judgment, on December 20, 1990, the government formulated the Mid-Term Defense Program to be implemented during the period from FY1991 through FY1995.

B. JAPAN'S DEFENSE EXPENDITURES

1. Trends in Defense Expenditures

From Figure 1, the ratio of the Defense Expenditures to GNP has been under 1 percent of GNP since FY1967 except in FY1987 through FY1989. The ratios in FY1987 through FY1989 were 1.004, 1.013, and 1.006 percent of GNP respectively (see Appendix D). Defense expenditures to GNP increased during the 1980's and decreased since FY1990.

With respect to the ratio of defense expenditures to national budget, the ratio decreased from a high of 11.32% in FY1958 to 5.13% in FY1981, from FY1981 to FY1988 the ratio increased to 6.53% then turned down again till FY1991 settling at 6.3% in FY1992.

⁴Defense of Japan 1991 (Japan Defense Agency) p95

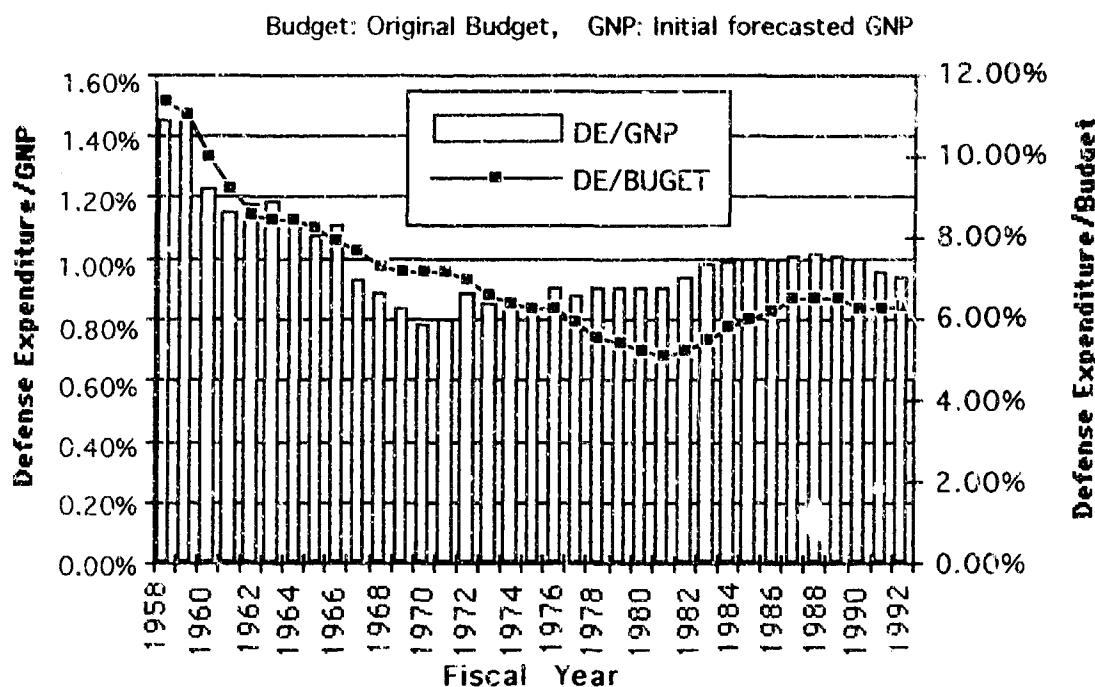
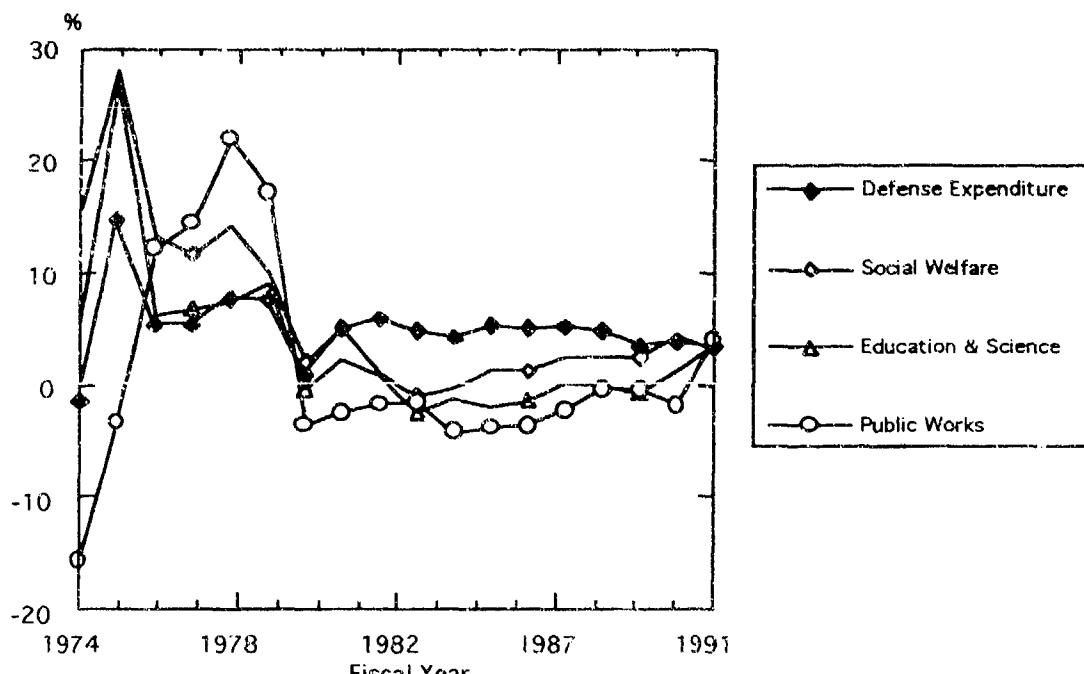


Figure 1
Trend in Japan's Defense Expenditure(DE)/GNP & DE/Budget

In comparison to the growth rate from previous fiscal years of other major budget items (Social Welfare, Education and Science, and Public Works), the growth rate of the defense expenditure for the first time exceeded those of other major budget items. This continued till FY1989 (see Figure 2 and Appendix E). From FY1982 through FY1988 the growth rate of the defense expenditures exceeded the entire budget. We can see here a clear shift of priority toward defense during the 1980's.



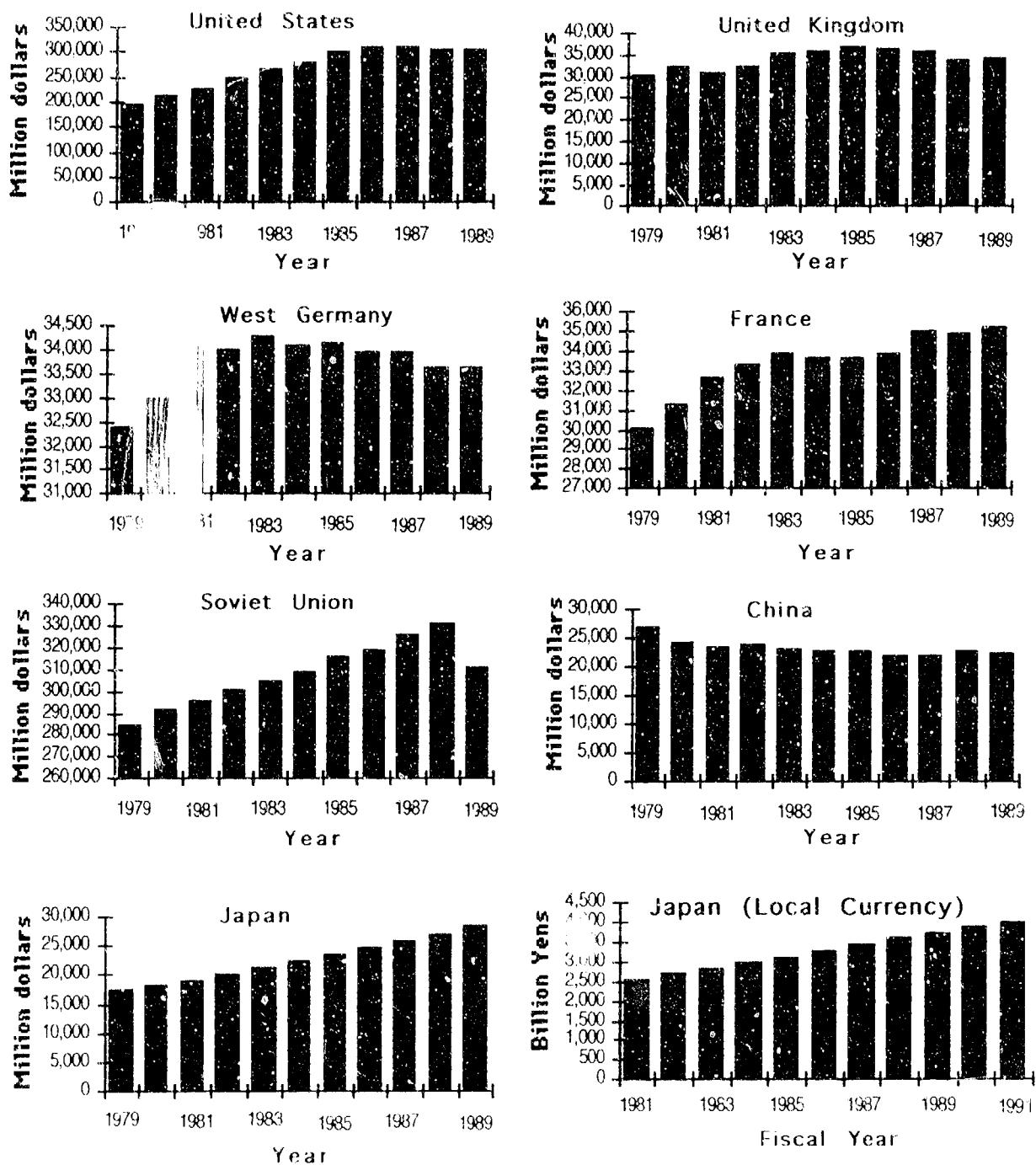
Note: This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 2
Growth Rate in Major Account Expenditures

In comparison to the defense expenditures of other countries, Japan's defense expenditures have been increasing steadily year by year (see Figure 3). United States' defense expenditures declined slightly year by year since 1987. Soviet Union's defense expenditures declined substantially in 1989 and China's defense expenditures have been constant or slightly declining during the 1980's.

2. Trends in Defense Expenditures Classified by Expenses

Figure 4 shows the trend in Japan's Defense Expenditures classified by expenses (personnel and provisions, current-year obligatory outlay, and current-year materials). Personnel and provisions expenses are outlays for

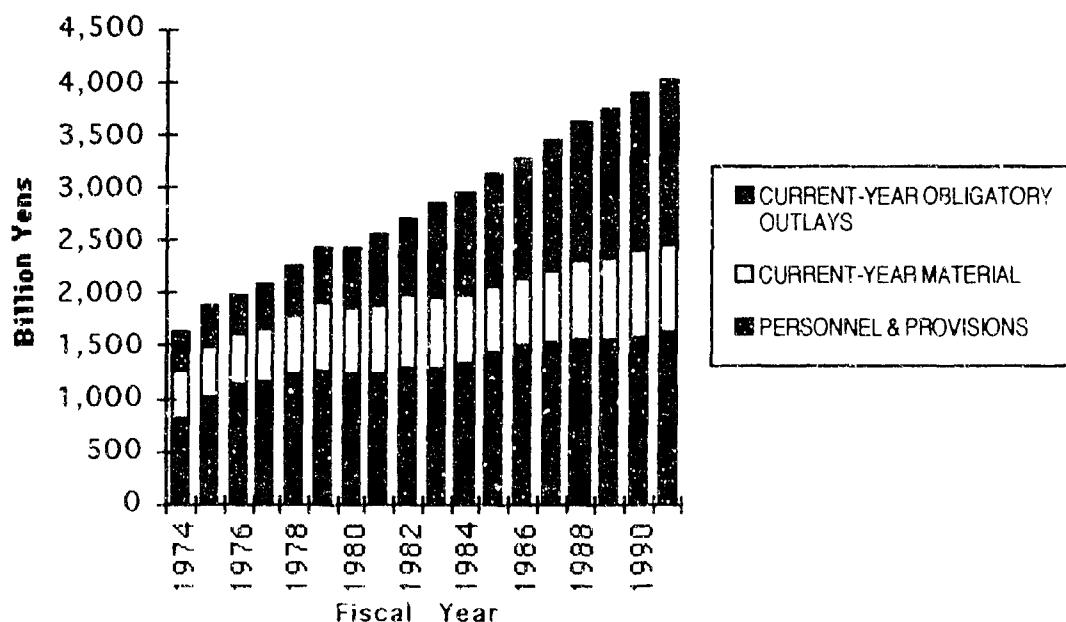


Note: These charts are expressed in U.S. dollars, based on 1989 prices and using a 1989 deflator. Japan's defense expenditures (local currency) are expressed in Yens, based on FY1985 prices and using a FY1985 deflator.

Source: World Military Expenditures and Arms Transfers 1990 (U.S. Arms Control and Disarmament Agency)

Figure 3
Defense Expenditures

pay and meals for JSDF personnel. Current-year obligatory outlays are expenses of contract authorization and expenses for continued projects already approved by the Diet by the preceding fiscal year. Current-year materials expenses are payable in the current fiscal year for the repair and improvement of equipment, for purchase of oil, for the education and training of JSDF personnel and for the procurement of new equipment. From Figure 4 one can see that the growth rate from previous years of current-year obligatory expenses were higher than those of other expenses (see Appendix F).



Note: This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 4
Trends in Japan's defense Expenditures (by Expenses)

Figure 5 shows the share trend in Defense Expenditures classified by expenses. From this figure one can see that the share of current-year obligatory outlays has been increasing year by year since FY1979. On the

other hand, the shares of personnel and provisions expenses and current-year materials expenses have been decreasing.

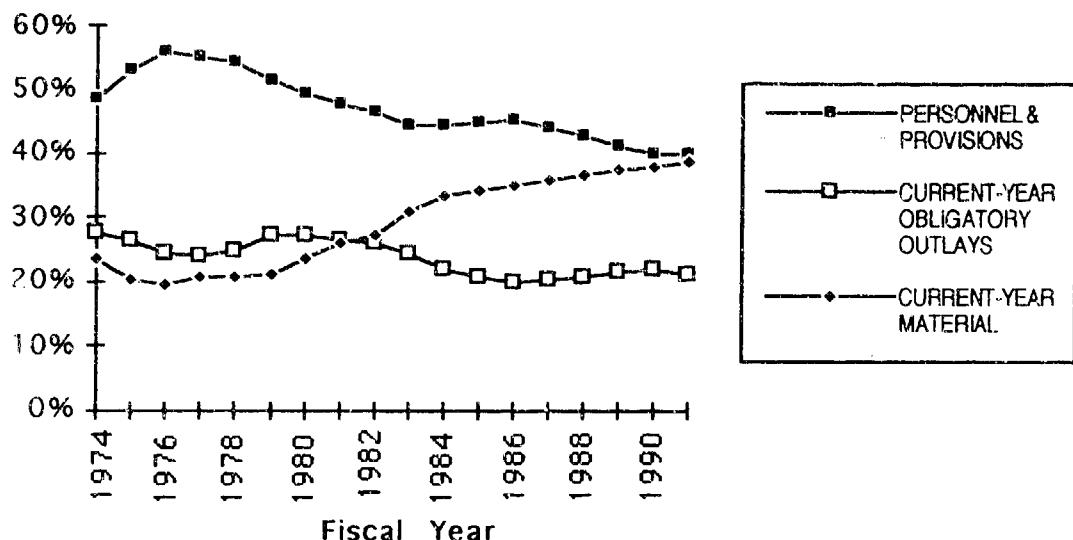
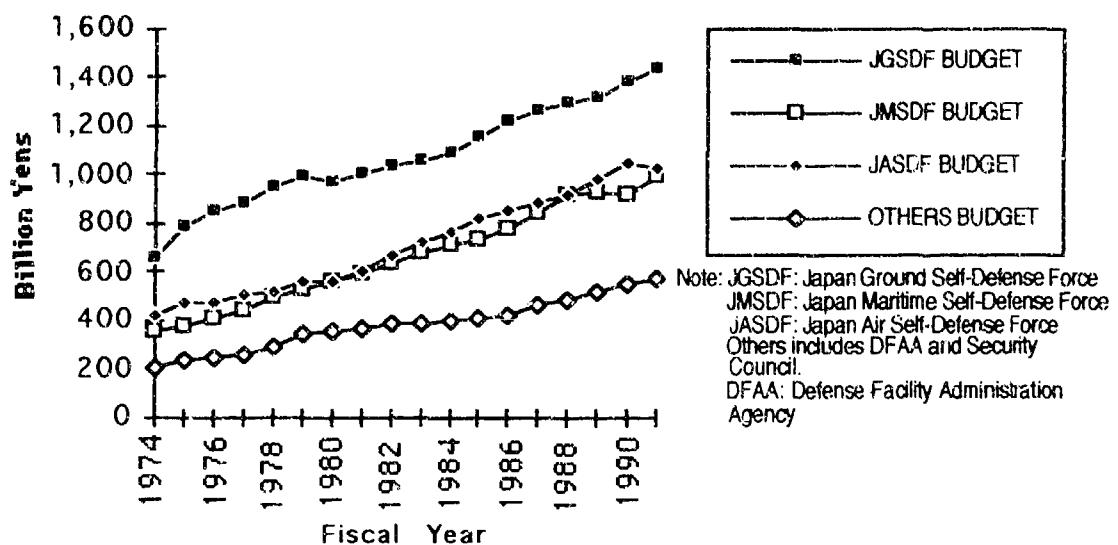


Figure 5
Trends in Japan's Defense Expenditures (By Expenses)

3. Trends in Defense Expenditures classified by Organization

Figure 6 shows the trends of the Service budgets since FY1974 and Figure 7 shows their share trends. Figure 6 shows steady budget growth for each Service. From Figure 7, in recent years the budget share of the JGSDF has been about 35% of the entire Defense Expenditure. It has decreased by 5% from what it was in FY1980. About 25% of Defense Expenditures is the JMSDF budget and that is almost the same as the JASDF budget (see Appendix G).



Note: This chart is expressed in Yens, based on FY1985 prices and using a FY1985 deflator.

Figure 6
 Trends in Japan's Defense Expenditures (by Organization)

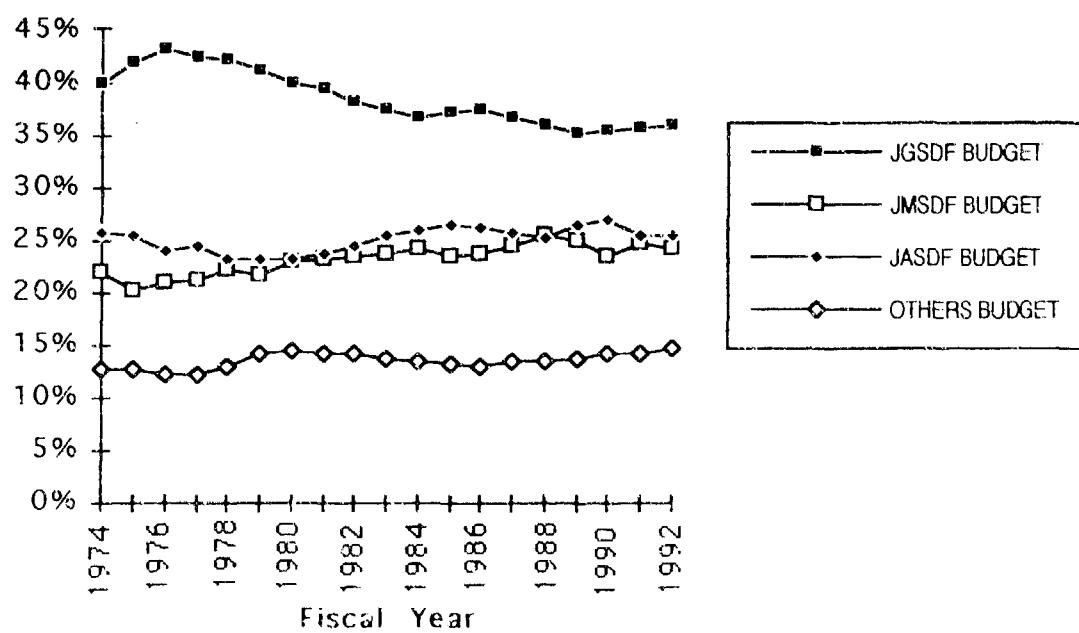


Figure 7
 Share Trends in Japan's Defense Expenditures (by Organization)

When we look into the ratio of each Service's budget to GNP, we can see the difference between data before FY1981 and data after FY1982. Table 2 shows the average ratio of each Service budget to GNP (also see Appendix H).

TABLE 2 Ratio of Each Service Budget to GNP

	Average Ratio (FY1974-FY1981)	Average Ratio (FY1982-FY1991)	Change
JGSDF	0.36%	0.36%	0%
JMSDF	0.19%	0.24%	0.05%
JASDF	0.21%	0.25%	0.04%

The increase of Japan's Defense Expenditures compared to GNP during the 1980's was caused by increases in the JMSDF and JASDF budgets.

4. JMSDF Budget

As stated above, the JMSDF budget is approximately 25 percent of the entire defense budget. Figure 8 shows the share trend in the JMSDF budget classified by expenses (personnel and provisions, current-year obligatory outlays, and current-year materials) (see Appendix I). Figure 9 shows the share trend in the JMSDF budget classified by three components, that is, personnel and provisions, front-line, and others. Front-line expenses are outlays for the procurement of ships and aircraft, etc. From Figures 8 and 10, since the late 1970's current-year obligatory outlay expenses and front-line expenses are larger compared to other expenses of the JMSDF budget. The priority of the JMSDF budget was set for shipbuilding expenses and aircraft procurement expenses (see Figure 10 and Appendix J).

We will find this change more clearly, when we look into the modernization of ships and aircraft later.

Another significant change is that the JMSDF budget was allocated most to personnel and provisions expenses during FY1974 through FY1979. It was caused by the cost increase driven by the so-called oil crisis. The inflation driven by the effect of the so-called oil crisis impacted substantially on the materials costs for shipbuilding also. As a result of the increased materials prices, shipbuilding could not be performed smoothly in accordance with the original program.

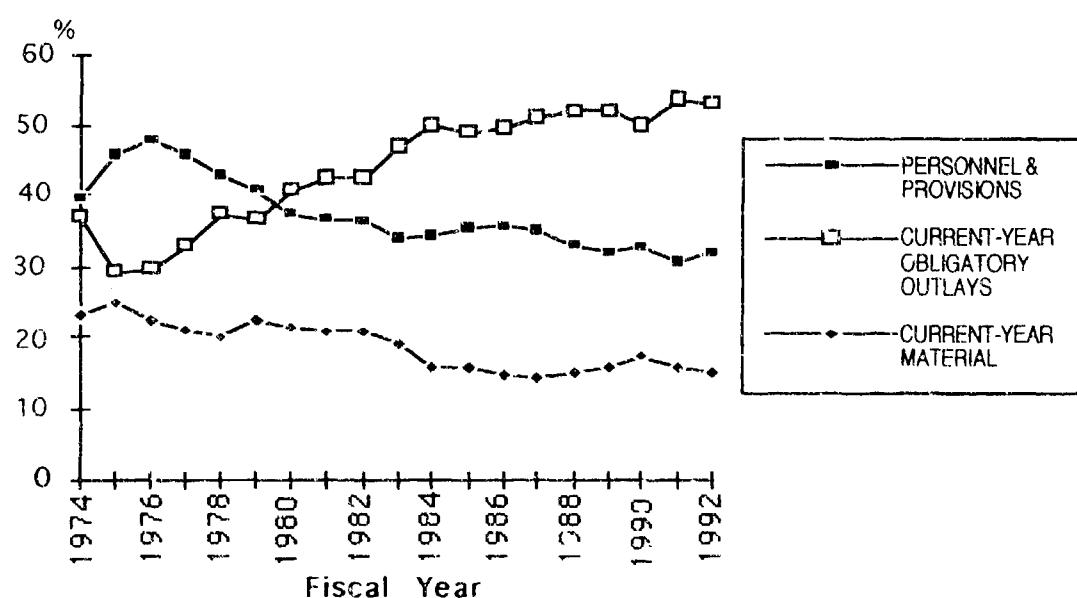


Figure 8
Share trends in JMSDF Budget (by Expenses)

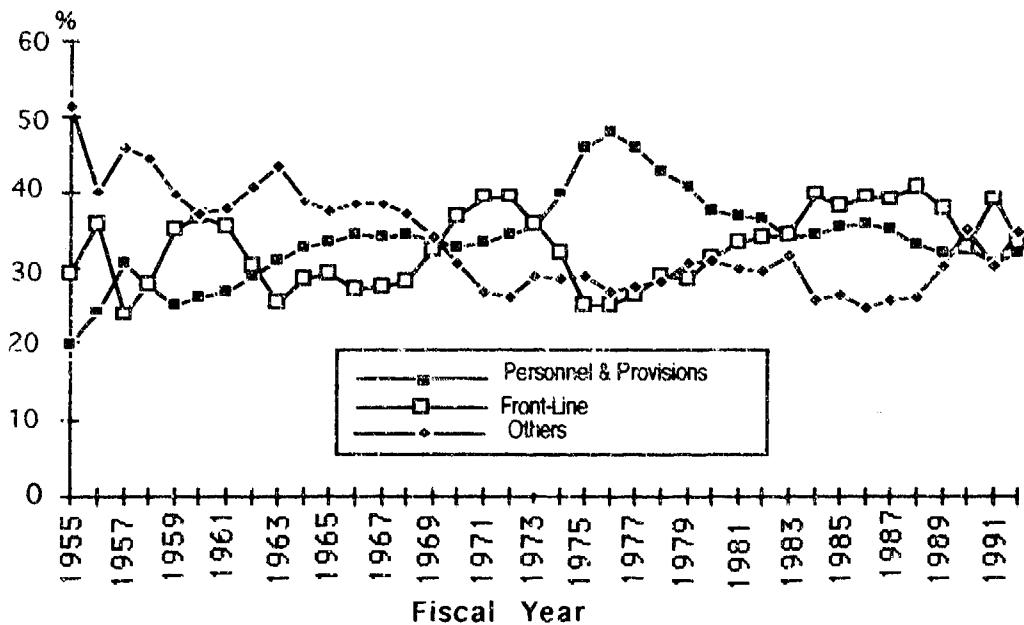
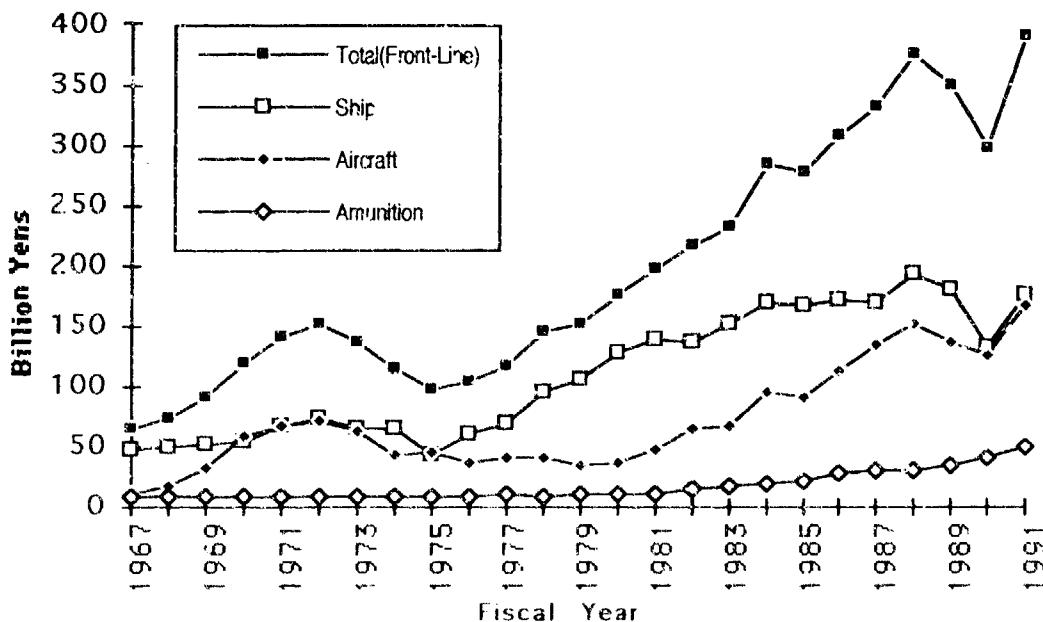


Figure 9
Share Trends in JMSDF Budget (by 3 Components)



Note: This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 10
Trends in JMSDF Front-Line Expenses

Table 3 clearly shows the effect of the oil crisis driven inflation on the cost of shipbuilding. The cost of ships scheduled in FY1973 increased by 30%-60% from the original cost. These additional expenses were paid from the construction fund that was supposed to have been spent for a DE and a SS scheduled for FY1974.

TABLE 3 Oil Crisis Effect on the Shipbuilding Program

Fiscal Year	Ship type	Ship Name	Ton	Original Cost (1,000Yen)	Revised Cost (1,000Yen)	Change Cost (1,000Yen)	Change (%)
1973	DDG	ASAKAZE	3,850	22,968,064	30,136,794	7,168,730	31.2
	DE	NOSHIRO	1,500	5,101,807	8,131,297	3,029,490	59.4
	SS	YAESHIO	1,850	9,808,169	15,232,172	5,424,003	55.3
1974	DD	YUGUMO	2,150	11,610,697	12,987,931	1,377,234	11.9
	DE			6,117,329	0	-6,117,329	-100.0
	SS			11,037,005	0	-11,037,005	-100.0

Source: Kaijօjօitai Yoyan Jimuteiyo (Kaijobakuryokanbu)

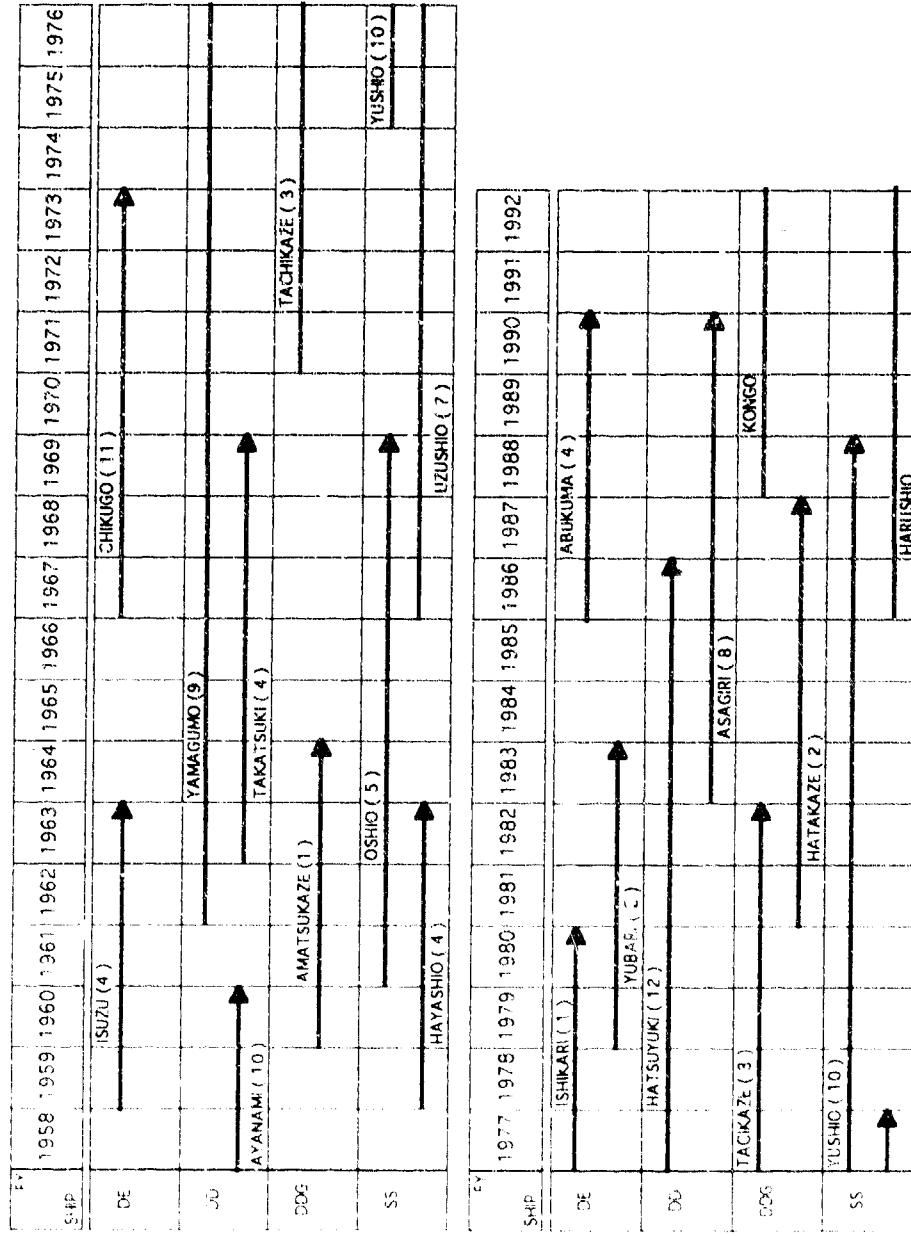
C. SHIP AND AIRCRAFT EXPANSION IN THE JMSDF

1. Ship Expansion

From observing ship construction over 30 years in the JMSDF, new ship types have been created every 7 to 10 years on average (see Table 4). The ship expansion pace has been substantially fast. Needless to say, new ship types bring increased costs.

Figure 11 shows trends in shipbuilding costs for the different types of ships (Escort Vessel : DE, Destroyer : DD, Guided Missile Destroyer : DDG, Submarine : SS)(see Appendices K and L). In every type the real building cost per ship increased substantially. For example, in DE the real building cost of ABUKUMA is 3.2 times as that of KITAKAMI. In the same manner, in DD, the

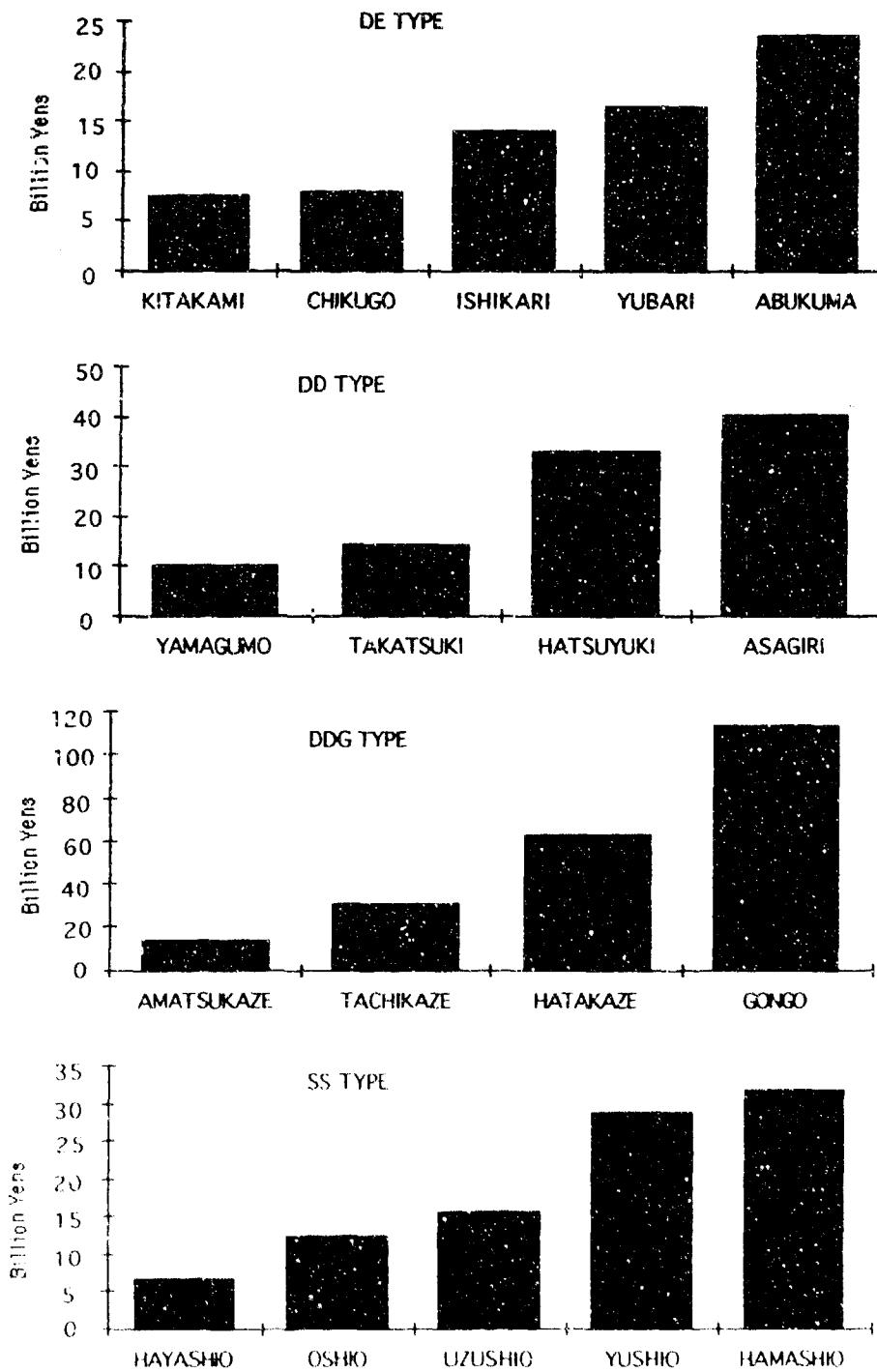
TABLE 4
Trends in JMSDF Ship Construction



Note 1. Number in parentheses is number of ships built as the same type.

Source: Kantei To Kokukukinshu (Kalliolieshinhunrysa) 2
→ is a period of ship building in the same type.

Source: Kantei To Kokukisyū (Kaijōjieshinhunsyō)



Note: These charts are expressed in real Yens, based on FY1985 prices and a 1985 deflator.

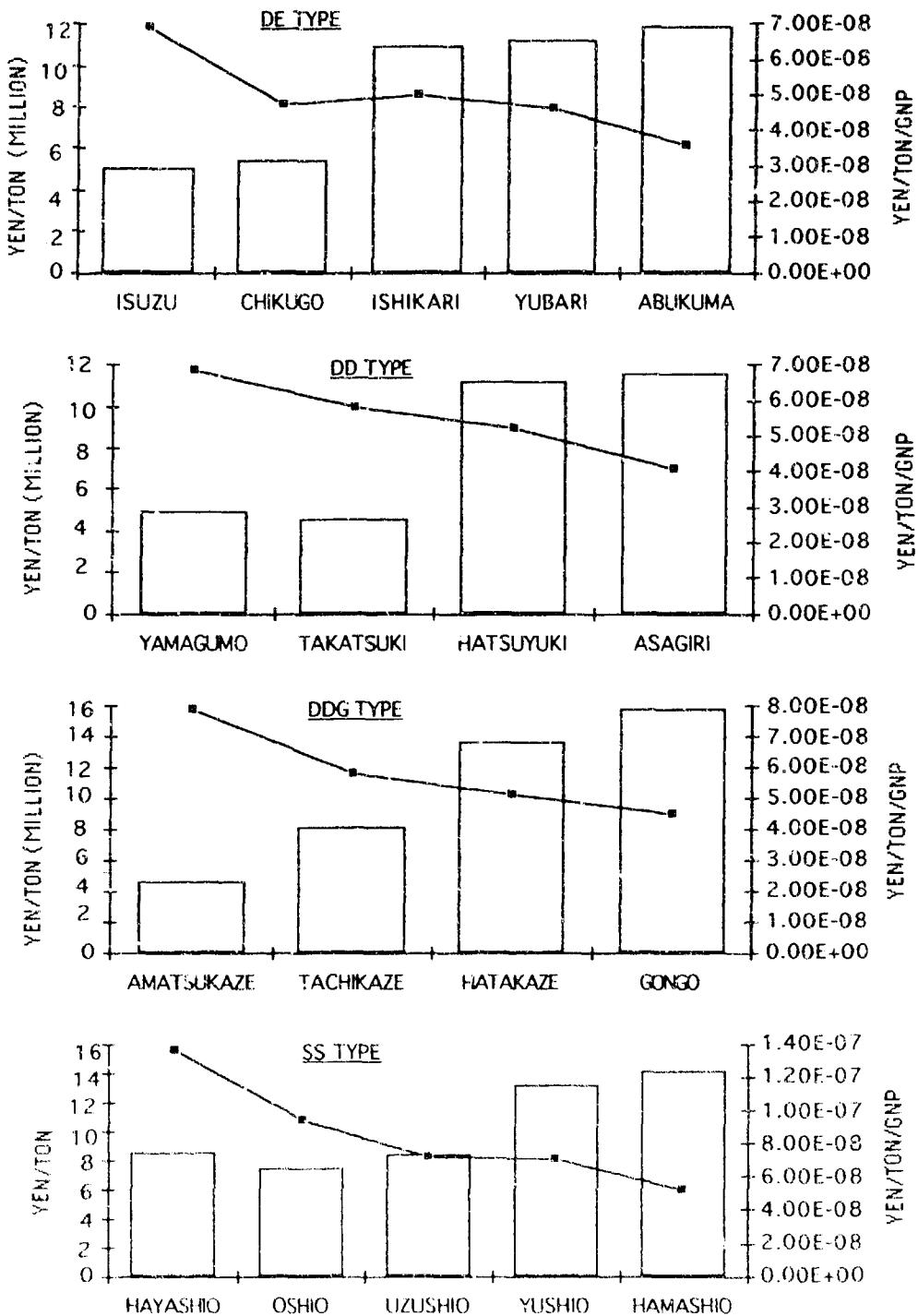
Figure 11
Trend of Shipbuilding Cost (by Ship type)

ASAGIRI's cost is 4 times of YAMAGUMO's, in DDG, the KONGO's cost is 8 times of AMATSUKAZE's, in SS, the HARUSHIO's cost is 4.8 times of HAYASHIO's (see Appendix M).

In terms of the real building cost per ship per standard displacement ton, we can see an ascendant trend like in the real building cost per ship (see Figure 12). We also notice that there is a big difference in the real building cost per ship per standard displacement ton between CHIKUGO and ISHIKARI in DE, between TAKATSUKI and HATAUKI in DD, between TACHIKAZE and HATAKAZE in DDG, and between UZUSHIO and YUSHIO in SS. This big difference means significant qualitative improvement in ship's system performance. In fact, there were introductions of computerized systems which control and access much tactical information and also gas turbines for main propulsion machinery. In addition, the JMSDF is starting to equip missile weapon systems on all new ships. This ship modernization with high technology started in the late 1970's. Ship modernization with highly efficient systems had an impact on the real ship building costs. As a result, the real ship building costs rose suddenly.

2. Aircraft Expansion

In the JMSDF almost all combat aircraft are Anti-Submarine Warfare (ASW) aircraft. From Figure 13 (also see Appendix N), we can see clearly the trend of ASW aircraft inventories over 30 years in the JMSDF. New type aircraft have been acquired about every 12 years in both fixed-wing aircraft and helicopters. There were sudden increases of the real costs between HSS-2 and HSS-2B in helicopters and between P-2J and P-3C in fixed-wing aircraft. The real cost of HSS-2B is 2.5 times as that of HSS-2 and P-3C cost is 2.3 times



Note: 1. Yen/Ton in these charts are expressed in Yens, based on FY1985 prices and using a FY1985 deflator.
 2. Line graph is measured by the right-hand scale.

Figure 12
 Trend of Yen/Ton and Yen/Ton/GNP

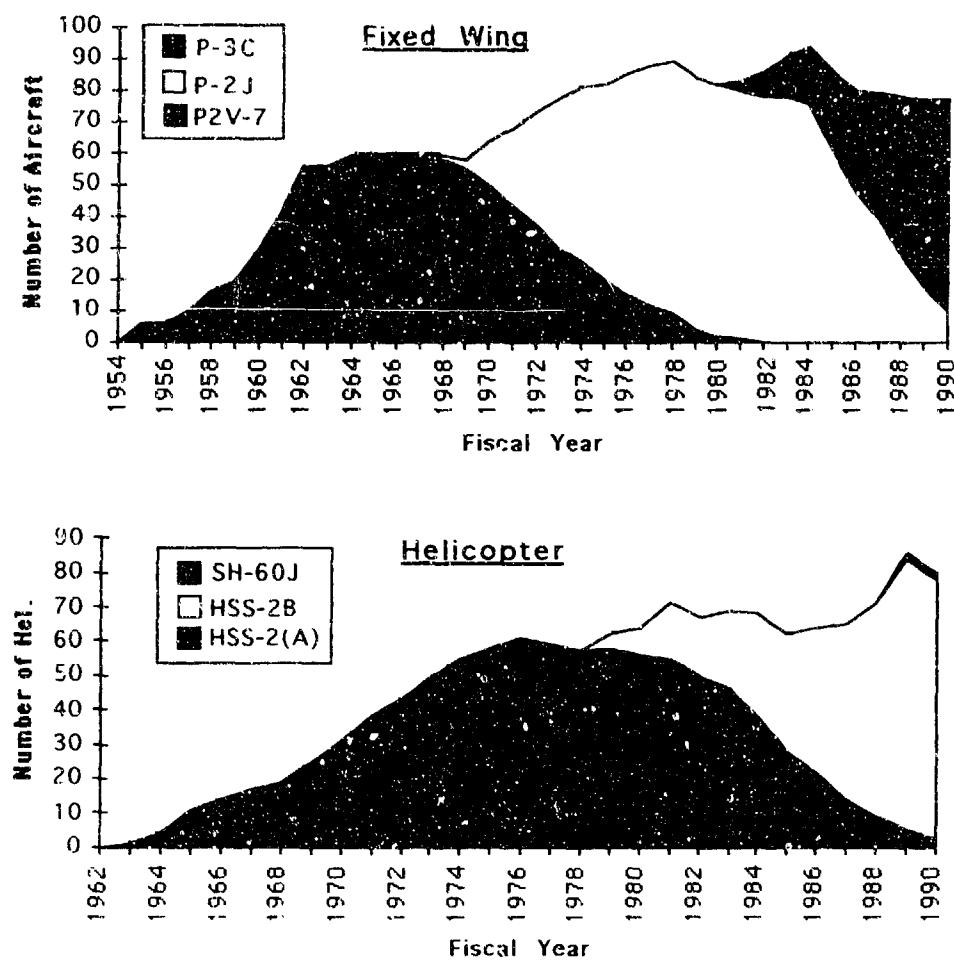
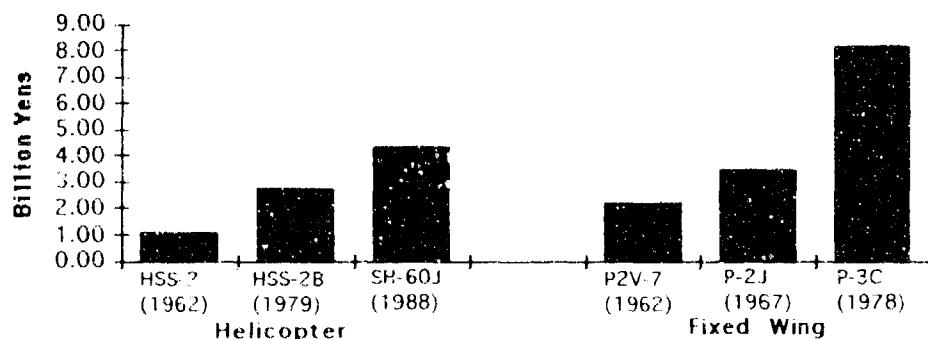


Figure 13
Trend of ASW Aircraft Inventories



Note: (Number) is the fiscal year when the aircraft was procured.
This chart is expressed in real Yens, based on FY1985 prices and a FY1985 deflator.

Figure 14
Aircraft Cost Trend (by Type)

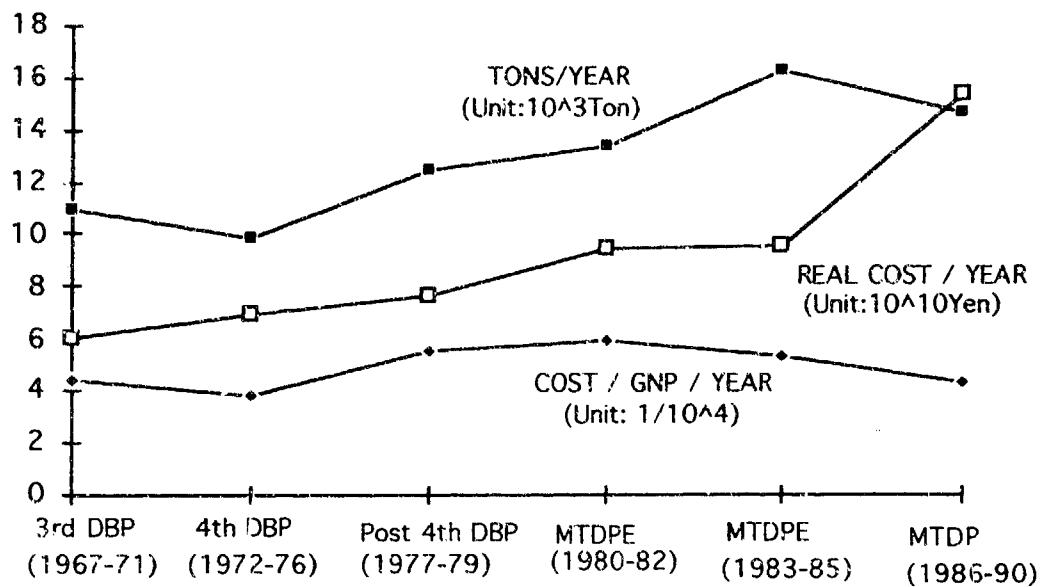
P-2J cost (see Figure 14 and Appendix O). P-3C's are equipped with computerized systems that can deal with a lot of collected tactical information in a short time. HSS-2B's are equipped with enhanced capabilities to manage information, such as the tactical data display system. This sudden rise of the real aircraft procurement cost also means an enhancement of capability and performance. Acquisitions of P-3C's and HSS-2B's began in the late 1970's.

3. Further Observations in Ship Expansion

As seen above, expansion of ships and aircraft with computer systems and enhanced capability and performance equipment has been promoted strongly since the late 1970's when the 4th Defense Buildup Plan was completed and the National Defense Program Outline was formulated. It is true that this expansion resulted in increased real procurement costs. We can, however, find different significant aspects by looking further at the expansion of ships and aircraft.

I examined the trend of the ratio of shipbuilding cost per ton to GNP shown. In DE: the ratio declines from KITAKAMI of 6.88/100million (expressed below as 6.88 instead of 6.88/100million) to ISHIKARI of 4.99 and to ABUKUMA of 3.58; in DD: from YMAGUMO of 6.87 to HATSUYUKI of 5.23 and to ASAGIRI of 4.08; in DDG: from AMATSUKAZE of 7.90 to HATAKAZE of 5.11 and to KONGO of 4.48; and in SS: NATSUSHIO of 13.7 to UZUSHIO of 7.23 and to HAMASHIO of 5.25.

Figure 15 shows the trends of displacement (Tons) built per year (Tons/Year), real building cost (FY 1985) per year (RealCost/Year), and the ratio of shipbuilding cost per year to average GNP (Cost/Year/GNP) during each defense program.



Note: DBP: Defense Buildup Plan; MTDPE: Mid-Term Defense Program Estimate; MTDP: Mid-Term Defense Program

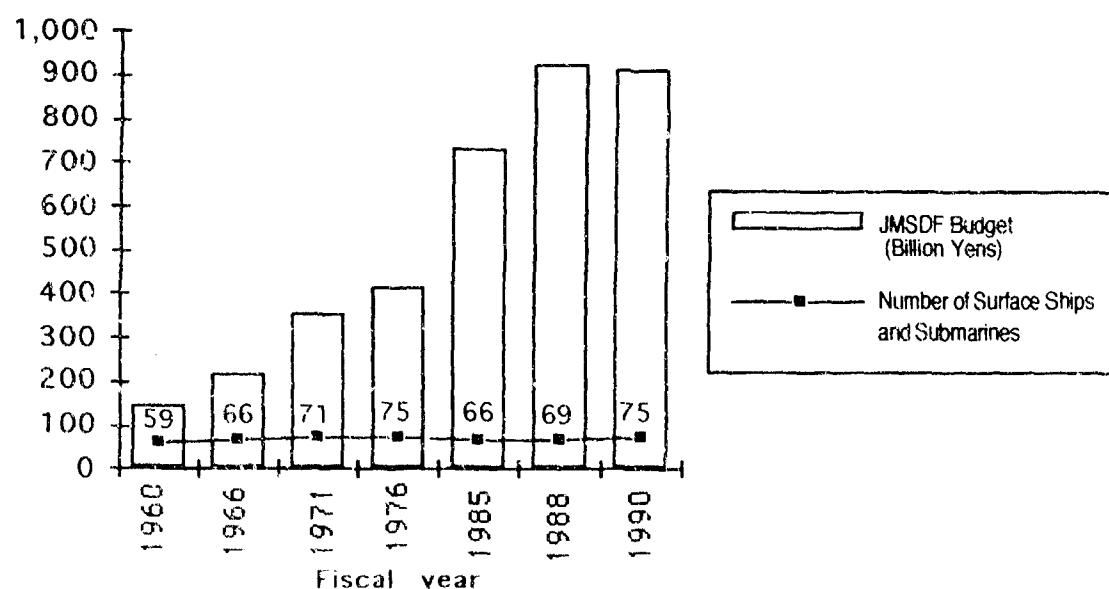
Figure 15
Trends in Shipbuilding (by 3 Indicators)

The result of a decline of the ratio of a shipbuilding cost per ton to GNP in each ship type, caused no expansion of the ratio of Cost/Year/GNP in each defense program. The ratio of Cost/Year/GNP in the 3rd Defense Buildup Plan (DBP) is almost the same as that in the Mid-Term Defense Program (MTDP). On the other hand, Tons/Year increased from 11,000 in 3rd DBP to 14,700 in MTDP and RealCost/Year also increased from 60 billion in 3rd DBP to 154 billion in MTDP. These increasing rates are 1.34 times in Tons/Year and 2.57 times in Real Cost/Year (see Appendix P). This means that the JMSDF could increase the amount of ships by almost the same cost to GNP, in spite of substantially increasing real shipbuilding costs.

In the past Japan's Defense Budget was allocated by about 1 percent of GNP and on average GNP has increased by 4.3% each year for the last 20 years (see Appendix Q). Under this situation, the JMSDF could have financial

resources to increase its number of ships and aircraft without causing financial difficulty.

As seen in Figure 16, the number of ships (Surface ships and Submarines) has remained constant at about 70 ships for the last 30 years. On the other hand the JMSDF's budget has increased. Since this means that extra money was spent on the same number of ships, displacement per ship was increased or more expensive and effective weapon systems were installed.



Note: Budget is expressed in Yen based on FY1985 prices and using a FY1985 deflator.
Source: Boei handbook (Asagumoshinbunsha)

Figure 16
JMSDF Budget and Ship Inventories

D. FINANCIAL RESOURCES TO IMPROVE JMSDF

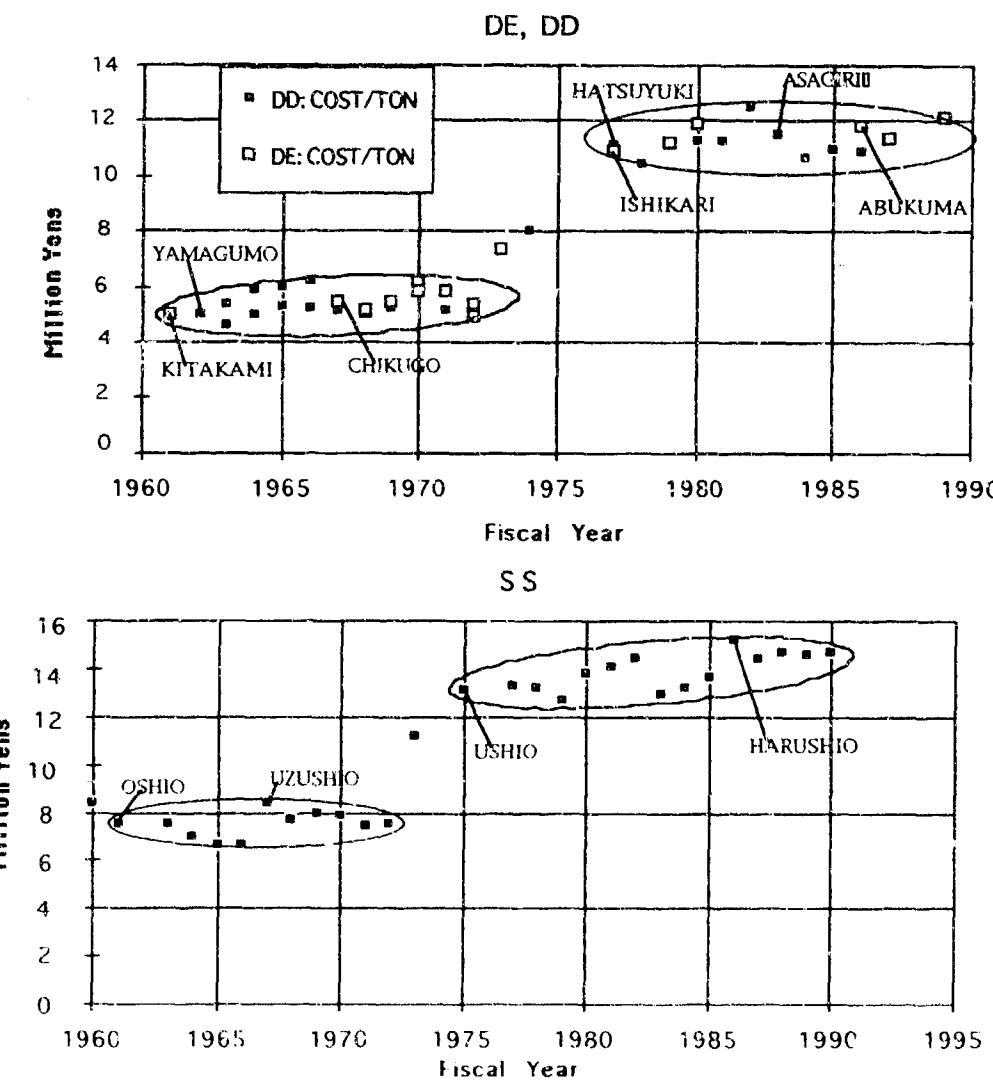
Assuming the Defense Budget will be allocated around 1 percent of GNP and GNP will continue to increase as it has in the past, JMSDF will have a potential capability to enhance its number of ships without financial difficulty.

When we take into account domestic issues and international situations at the present and in the future, we must say the assumption above is fairly optimistic. At first the average real growth rate of the Japanese economy in the future might be lower than that of the past⁵. "The next ten years will be a critical period for Japan, which must begin considering how to provide for its aging society. If Japan does not invest in societal infrastructure during this period, when saving rates are high and its population active, it will not be able to insure that people continue to enjoy a quality of life similar to that of Europe and the United States."⁶ The priority of budget allocation will tend to shift to Social Welfare and Public Works.

Figure 17 shows real shipbuilding costs (FY1985) per ton for DE, DD, and SS. We can categorize two groups by before FY1974 and after FY1975. As I stated before, DE ISHIKARI, DD HATSUYUKI, and SS USHIO are ships equipped with highly computerized equipment, missile weapon systems, and gas turbine machinery (except SS). Ships after FY1975 are, so-called, New-Type-Ships and ships before FY1974 are, so-called, Conventional-Type-Ships. From Figure 17, we can see that real costs will rise substantially when the ships equipped with

⁵The Japanese new economic plan (formulated by the Economic Deliberation Committee in January 1992) set average real growth rate target at 3.5%.

⁶Asian Security 1992-93 (Research Institute For Peace And Security, Tokyo) p129



Note : The shipbuilding costs are expressed in real Yens based on FY1985 prices and using a Fy1985 deflator

Figure 17
Trends in Shipbuilding Cost/Ton

highly advanced technological systems are constructed. In the past the JMSDF had enough financial resources to cover the increased costs introduced by advanced technological systems.

In addition the end of the Cold War will not lead Japan to enhance military forces over its current levels and will likely cause defense expenditures to be cut.

When we focus on the future of the JMSDF taking the above factors into consideration, the JMSDF is likely to have less financial resources to enhance its current force level.

III. COMPLEMENTARY RELATIONSHIP BETWEEN THE JMSDF AND THE U.S. NAVY

A. BALANCED NAVY CONCEPT

"...From the Sea", which is the U.S. Navy and Marine Corps White Paper published in September 1992 by the Department of the Navy of the U.S., stated the following about Naval Forces and Naval organizations. "As Naval Forces shift from a Cold War, open ocean, blue water naval strategy to a regional, littoral, and expeditionary focus, Naval organizations will change. Responding to crises in the future will require great flexibility and new ways to employ our forces." Naval Force Packages will consist of the following different types of ships and aircraft:

- Aircraft carriers and air wings
- Amphibious ships with embarked Marines
- Surface combatants
- Navy Special Warfare Forces
- Submarines
- Maritime Patrol Aircraft
- Mine Warfare Forces

If we follow the U.S. Naval strategy, the balanced Navy concept continues to be relevant in the future even though the U.S. Naval Forces shift from "a Cold War, open ocean, blue water naval strategy to a regional, littoral, and expeditionary focus". Therefore I will compare Naval Forces among different countries based on the balanced Navy concept. When we measure relative levels of certain country's naval capabilities to accomplish its mission(s), this concept is one way to compare fleet composition of certain country's navies with that of other countries' navies. It can be allowed to categorize fleet composition into Aircraft Carriers (CV), Ballistic Missile Submarines (SSBN), other Submarines (SS), Cruisers, Destroyers (DD) and Frigates (FF), Mine

Warfare Ships (M/W), Amphibious Warfare Ships (A/W), and others. Both CVs and SSBNs have strategic missions.

B. COMPARISON OF FLEET COMPOSITION

Figures 18 and 19 show fleet compositions with numbers of ships and displacement (full load tons) in natural logarithms respectively in light of the above categories (see Appendices R, S, and T). These include fleet compositions of the entire U.S. Navy, U.S. Pacific Fleet, Russian Navy⁷, Russian Pacific Fleet, French Navy, U.K. Navy, and the JMSDF.

In terms of number of ships from Figure 18, we can say the following: the U.S. Pacific Fleet is approximately one half of the entire U.S. Navy. The number of SSENs and SSs in the U.S. Pacific Fleet is, however, one-third of the entire U.S. Navy. Two-thirds of the entire SSBNs and SSs of the U.S. are deployed in the Atlantic Fleet. It shows the U.S. sets the priority of deterrent by SSBNs on the Atlantic Ocean rather than on the Pacific Ocean because the Atlantic Ocean faces NATO allies and Russia. In addition, Mine Warfare Forces of the U.S. Navy are relatively smaller not only than other component forces but also that of the Russian Navy. The U.S. does not deploy diesel submarines. The reason is that the U.S. Navy has emphasized offensive capabilities. The Russian Pacific Fleet makes up one-third of the entire Russian Navy. The French Navy, the U.K. Navy, and the JMSDF take similar shapes. But it's hard to say that this is an appropriate way to measure fleet capabilities, because this

⁷In this thesis, I will use "Russia" as the word meaning the former U.S.S.R.. In "Military Balance 1992-1993" (The International Institute for Strategic Studies), the word "Russia" is used instead of former U.S.S.R.. Also in "Jane's Fighting Ships 1992-93", the word "Russia and Associated States" is used.

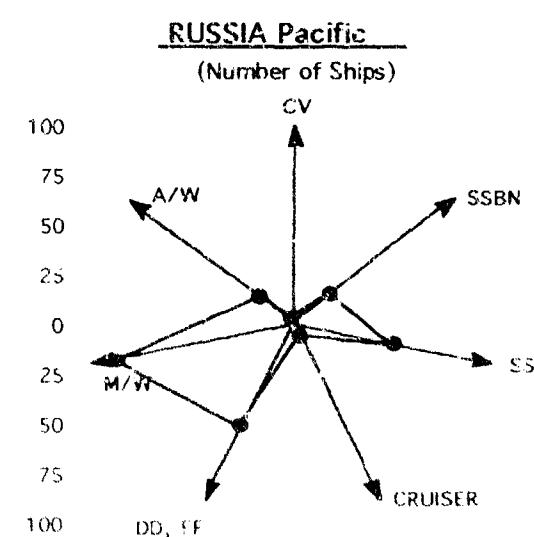
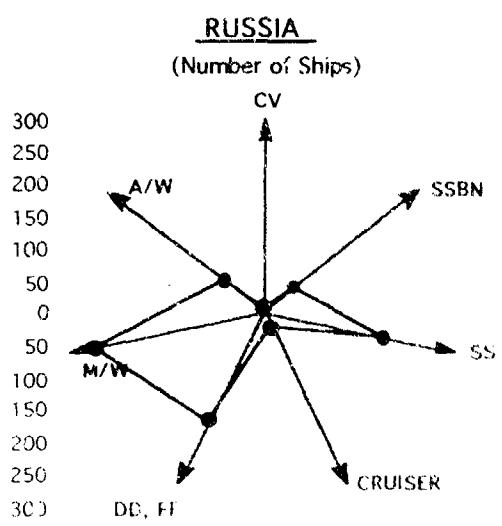
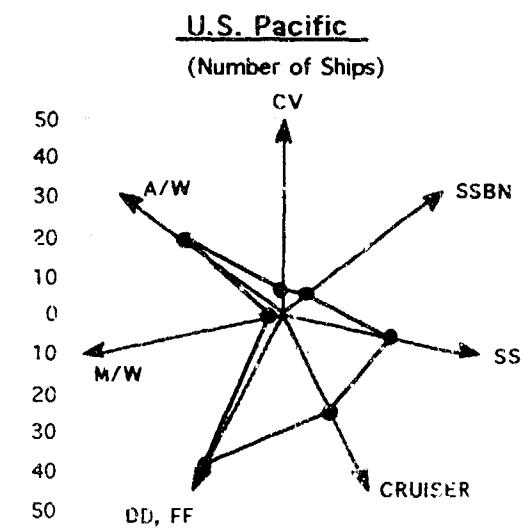
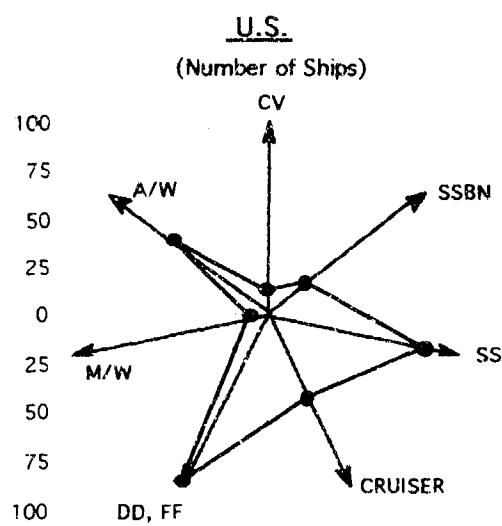


Figure 18
FLEET COMPOSITION (Part 1)
(Number of Ships)

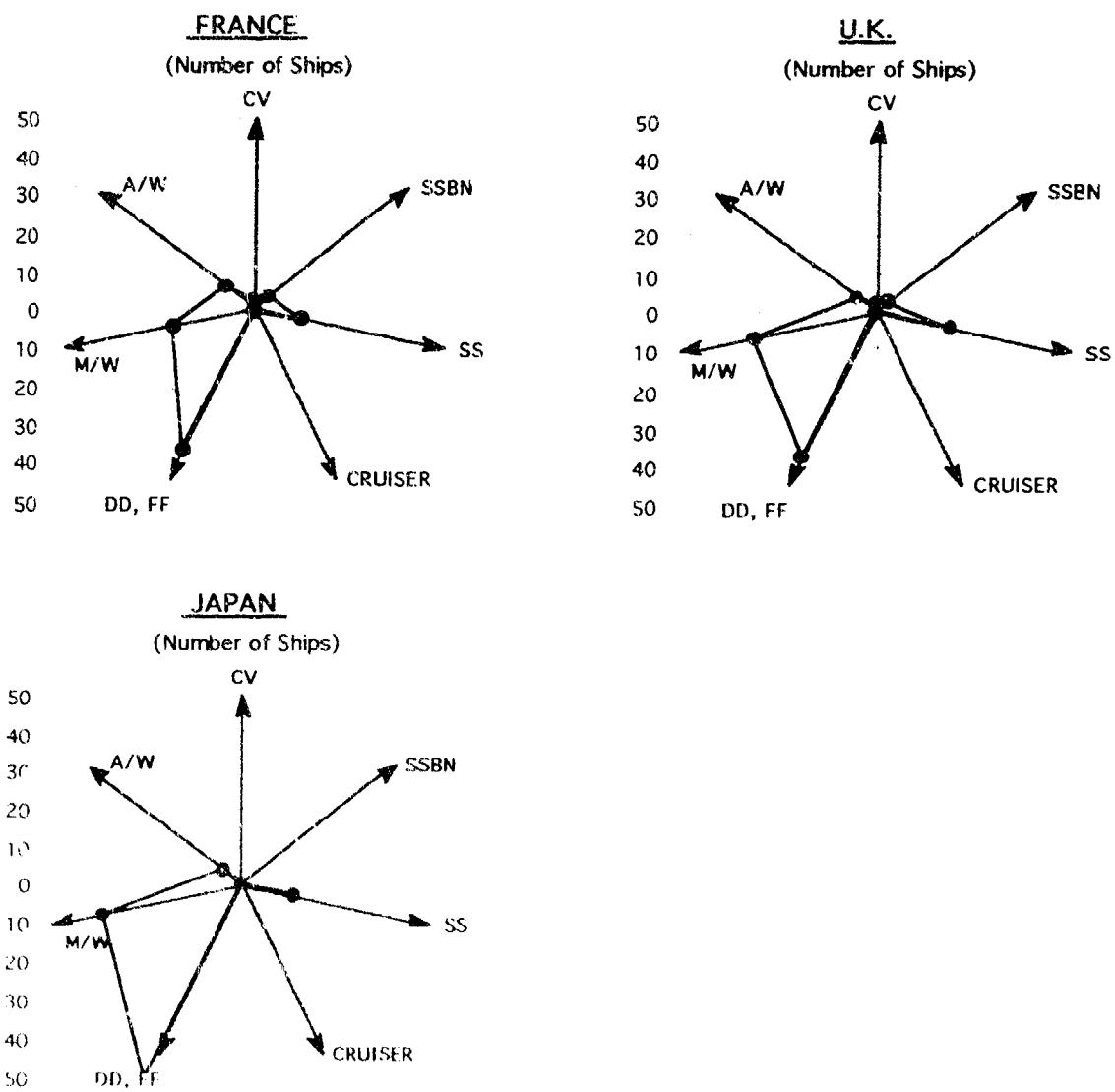


Figure 18
FLEET COMPOSITION (Part 2)
(Number of Ships)

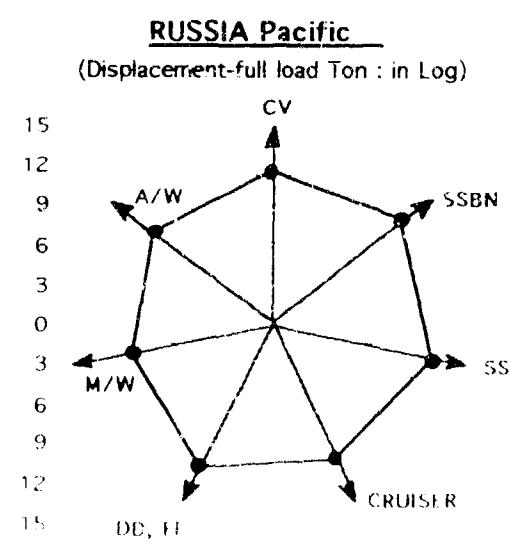
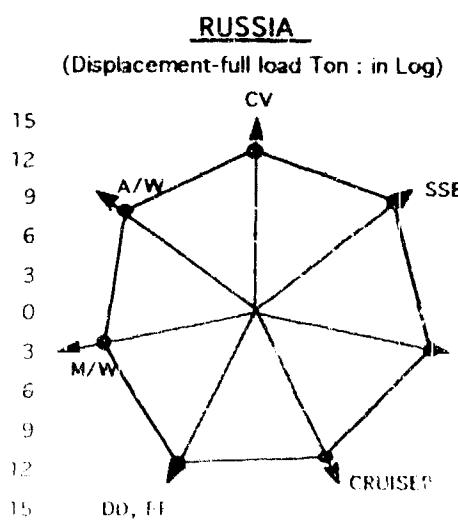
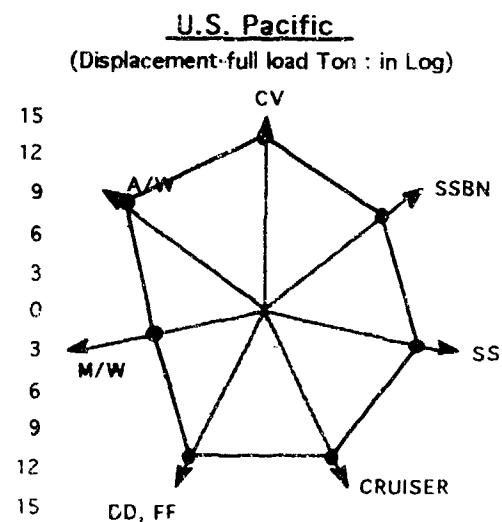
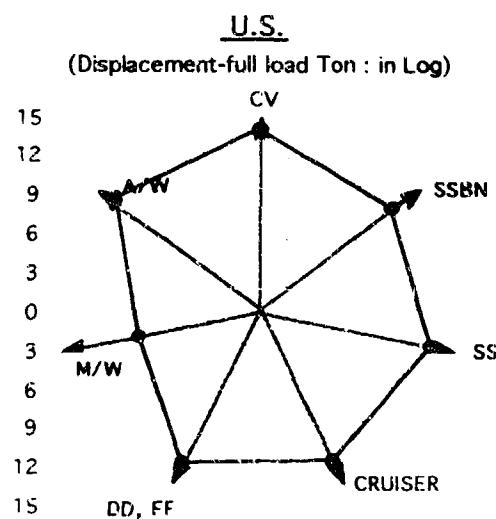


Figure 19
FLEET COMPOSITION (Part 1)
(Displacement, Full Load Ton: In Natural Log.)

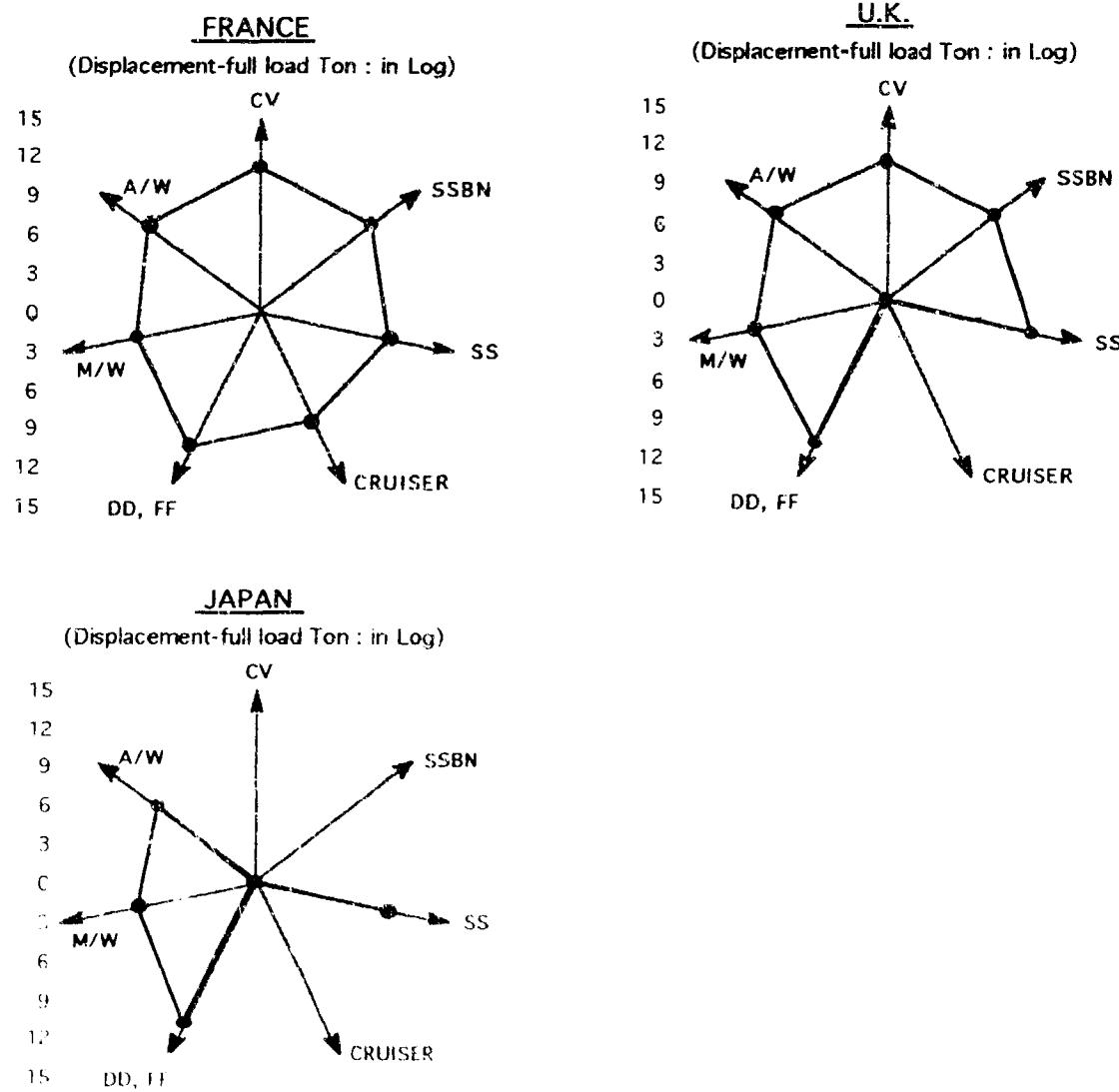


Figure 19
FLEET COMPOSITION (part 2)
(Displacement, Full Load Ton: In Natural Log.)

figure considers the capability of one ship as the same as that of any other ship regardless of its size.

Figure 19, which deals with fleet composition with displacement (full load ton) in natural logarithm, is better than Figure 17 in measuring fleet capability as a whole⁸. Because ship displacement is a good cost driver of shipbuilding, there is a high positive correlation between ship displacement and shipbuilding cost. As seen in different types of ships such as the CV, DD, SSBN, SS, etc., the greater the capability of the ship is, the higher the shipbuilding cost.

From Figure 19, we can see obviously that all the Fleets I listed above except the JMSDF have well balanced fleet compositions and capabilities and the JMSDF looks rather unique in its fleet composition in comparison to the other countries.

With respect to the JMSDF from Figures 18 and 19, many destroyers and mine-sweeping ships are the main feature of the JMSDF's physical ship assets. The JMSDF lacks strategic capability against other countries. Nowadays the JMSDF's destroyers are equipped with anti-air missile systems. These missile systems have difficulties dealing with many targets at the same time because of the limitations of their tracking radars. Therefore from these figures we can also see that the JMSDF has a drawback of no air cover to protect its ships on sea in areas beyond air cover offered by the fighters of the Japan Air Self-Defense Force (JASDF).

⁸There is another way to measure fleet composition by inventory value that may be the best measure. We have not, however, employed this inventory value measure, which is the dollar value of the different class of ships known, because of the difficulties in comparing different currencies.

C. COMPARISON OF AIRCRAFT ASSETS

Figure 20 is my attempt to show the aircraft asset composition each navy has. I tried categorizing navy combat aircraft into Bomber (BBR) and Fighter (FTR), Anti-submarine Warfare (ASW) Aircraft and Maritime Reconnaissance (MR) aircraft, Electronic Warfare (EW) aircraft, Airborne Early Warning (AEW) aircraft, Commando (CDO) aircraft, and Mine Countermeasure (MCM) aircraft. In the case of aircraft, unlike ships, it will be allowed to consider the capability of one aircraft type as equivalent to other aircraft types even though they have different missions. Therefore I measure aircraft force capability by the number of aircraft in each category.

From Figure 20, although shapes of fleet composition of French Navy, U.K. Navy, and JMSDF took similar shape, in the case of aircraft, they have substantially different aircraft asset compositions. The U.K. has greater aircraft capabilities than France. Major features of the JMSDF are ASW, MR, and MCM aircraft. From Table 5, we can see the qualitative aspects of each countries' aircraft inventories. Figure 21, which shows the totals of land-based ASW maritime patrol aircraft (MPA) in NATO and Japanese forces, also reinforces the JMSDF's ASW feature. Japan has about 14 percent of the total MPA aircraft.

D. CONSISTENCE WITH JAPANESE AUTHORITY

As stated above, many destroyers, mine-sweeping ships, many ASW and MR aircraft, and MCM aircraft are major features of the JMSDF's physical assets. This result should be both intended and well achieved by the Japanese authority.

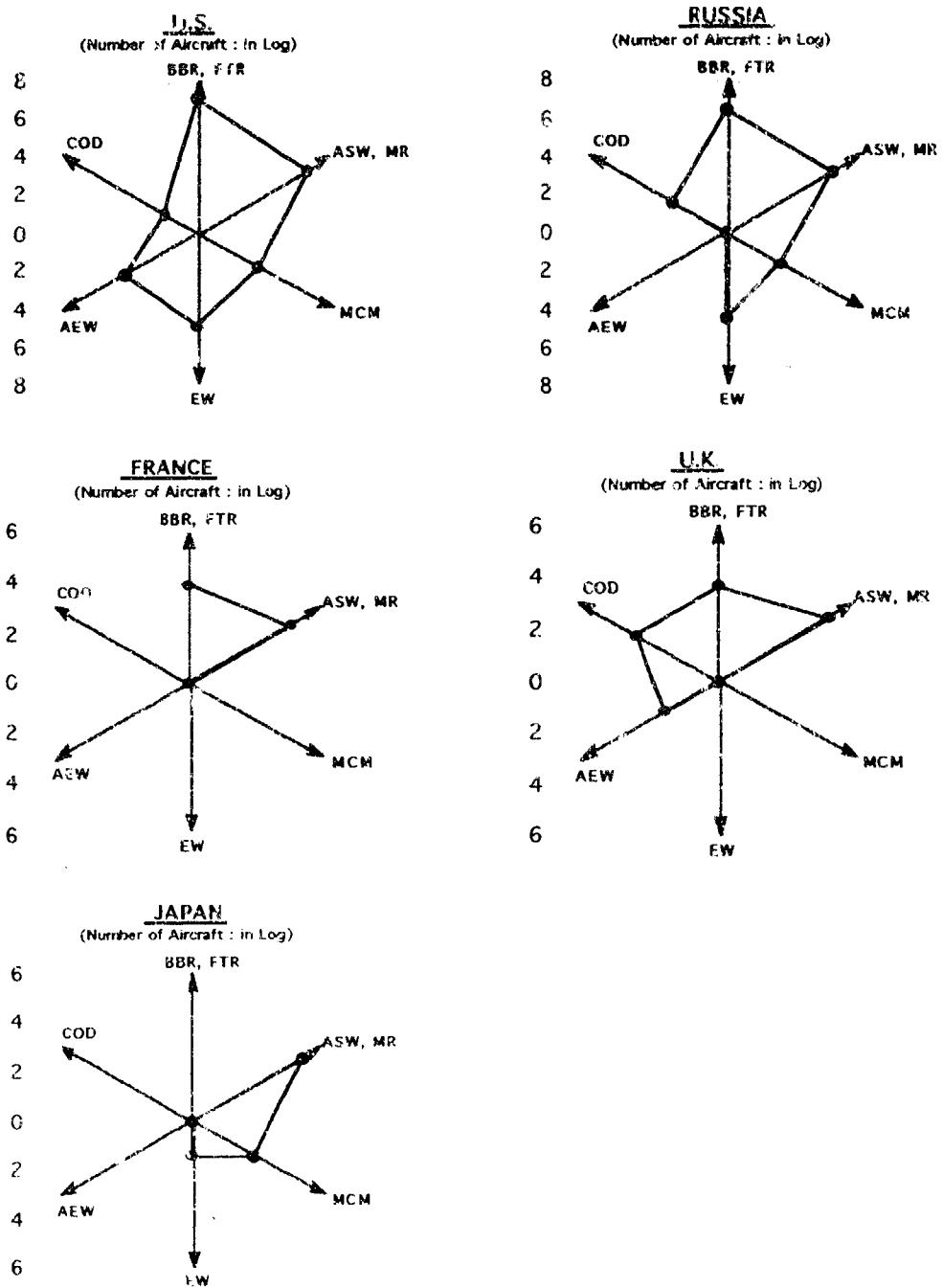


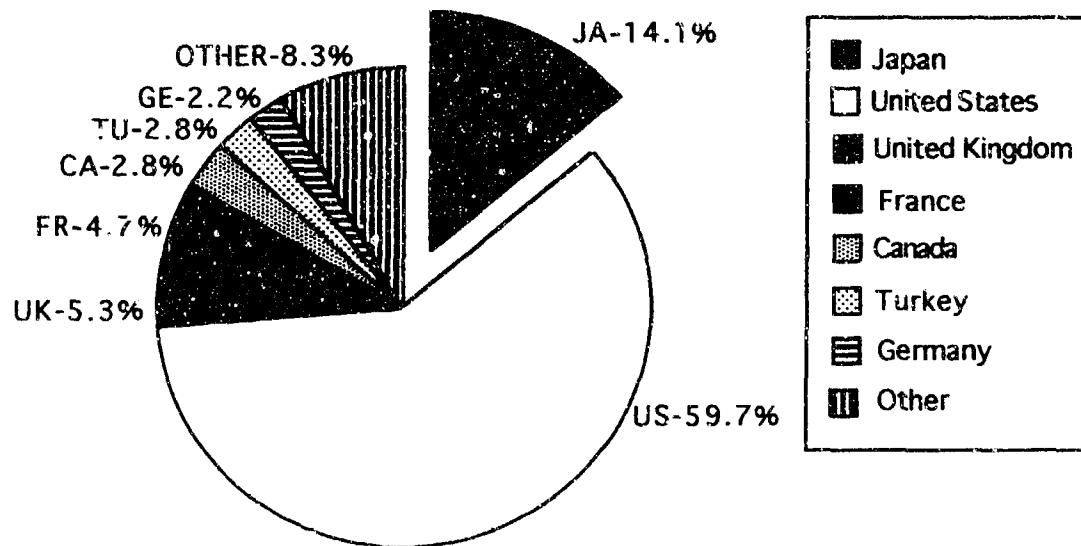
Figure 20
AIRCRAFT ASSET COMPOSITION
(Number of aircraft ; in Natural Log.)

TABLE 5 Contents of Aircraft Assets

AIRCRAFT	U.S.	RUSSIA		FRANCE		U.K.		JAPAN	
BOMBER		TU-26	155						
		TU-16	70						
STRIKE				SUPER ETENDA	38				
FTR	F-14-A	266	SU-17	165	CRUSADER	12	SEA HARRIER	40	
	F-14-A PLUS	68	SU-24	100					
	F-14-D	41	SU-25	55					
	F/A-18-A	225	MIG-27	30					
	F/A-18-C	283	MIG-29	35					
	A-6-E	279							
ASW	S-3A/B	99	TU-142	58	ALIZE	17			
			II-38	41					
			BE-12	92					
MR	P-3B/C	209	TU-22	5	ATLANTIC	24		P-3C	66
			SU-24	12	ATRANTIQUE	6		P-2J	10
			AN-12	8	GARDIAN	5			
			II-20	2					
EW	EA-6B	109	TU-95	24				EP-2J	2
	EA-3	5	TU-16	39				EP-3C	2
	EP-3	17							
AEW	E-2C	72							
COMMAND	EC-130Q	7							
TRG	F/A-18-B	27		ETENDARD	10	SEA HARRIER	5	KM-2	30
	F/A-18-D	92		ALIZE	8	JETSTREAM	19	P-3C	10
	F-5E/F/T-38	40		ZEPHYR	14	CHIPMUNK	14	QUEEN AIR 65	22
	F-16-N	22		NORD 262	15			T-5	8
	TF-16N	4		NAVAJO	2			TC-90/UC-90	23
	A-4E/F	59		XINGU	11			YS-11T	10
	TA-4F/J	194		RALLYE 600	4				
	TE-28	10		MS-760	8				
	T-2B/C	150		FALCON 10MER	3				
	T-38D/N	18							
	TA-7C	7							
	T-44	54							
	T-45	15							
MISC		98		59		56		34	22

HELICOPTERS:									
ASW	SH-60B	137	MI-14	69	LYNX	35	SEA KING	51	HS-2A/B
	SH-60F	60	KA-25	85	SA-321	12	LYNX	77	
	SH-60FG	74	KA-27	110					
	SH-3D/G/H	108							
MCM	RH-53D	6	MI-14	25				KV-107A	5
	MH-53E	31						S-80	12
EW			KA-25	25					
AEW							SEA KING	10	
COMMANDO			KA-27	25			SEA KING	34	
TRG	CH-46	231		SA-313	4	SEA KING	25	HS-2A/B	10
				SA-316/319	15	GAZELLE HT-2/3	26	OH-6D/U	12
MISC		16		17	35		0		4

Source: The Military Balance 1992-1993 (the International Institute for Strategic Studies)



Source: Report on Allied Contributions to the Common Defense,
(U.S. Secretary of Defense)
P2-34

Figure 21
ASW Aircraft (in 1988) Total NATO and Japan

We can easily see this authority in the "National Defense Program Outline" (NDPO). The following refers to the posture of the JMSDF in the NDPO.

1. The JMSDF must possess one fleet escort force as a mobile operating ship unit in order to quickly respond to aggressive action and such situations at sea. The fleet escort force must be able to maintain at least one escort flotilla on alert at all times.
2. The JMSDF must possess, as ship units assigned to coastal surveillance and defense, surface anti-submarine capability of at least one ship division in operational readiness at all times in each assigned sea district.
3. The JMSDF must maintain submarine units, anti-submarine helicopter units and minesweeping units, providing the capability for surveillance and defense missions as well as minesweeping at important harbors and major straits when such necessity arises.
4. The JMSDF must maintain fixed-wing anti-submarine aircraft units in order to provide the capability of carrying out missions of surveillance and patrol of the nearby seas and ship protection.

Descriptions of the actual scales of organizations and primary equipment under the foregoing concepts are given in its attachment (see Table 6).

TABLE 6 Inventory Level in JMSDF by NDPO

<u>Basic Units</u>	
Anti-submarine Surface-Ship Units (for mobile operations)	4 Escort Flotillas
Anti-submarine Surface-Ship Units (Regional District Units)	10 Divisions
Submarine Units	6 Divisions
Minesweeping Units	2 Flotillas
Land-based Anti-submarine Aircraft Units	16 Squadrons
<u>Main Equipment</u>	
Anti-submarine Surface Ships	Approx. 60 Ships
Submarines	16 Submarines
Combat Aircraft	Approx. 220 Aircraft

Here we can see that the features of the JMSDF's physical assets are consistent with the contents of the NDPO.

E. COMPLEMENTARY TO THE JMSDF

I assume here again that the entire function of the navy is measured both by the level of fleet composition categorized into CV, SSBN, SS (less SSBN), Cruisers, DD and FF, Mine Warfare Ships, Amphibious Warfare Ships, and others, and by the number of navy combat aircraft categorized into BBR and Fighter, ASW Aircraft and MR aircraft, EW aircraft, AEW aircraft, CDO aircraft, and MCM aircraft.

Figure 22 shows some combinations between the JMSDF and some parts of the U.S. Navy in fleet composition (also see Appendix U). I consider U.S. Navy ships homeported in Japan and one-third of the U.S. Pacific Fleet as some parts of the U.S. Navy. Because they seem to be considered as the marine force

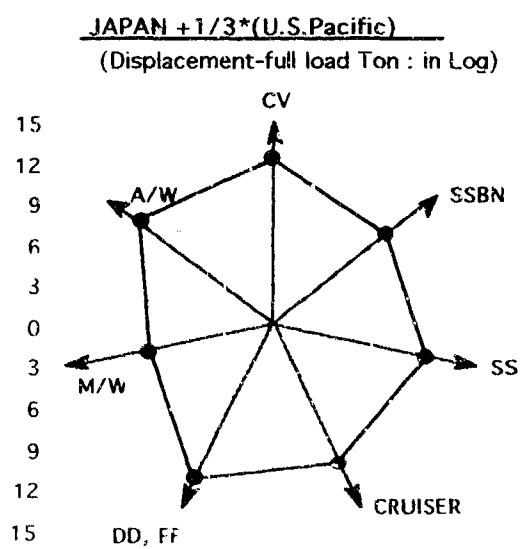
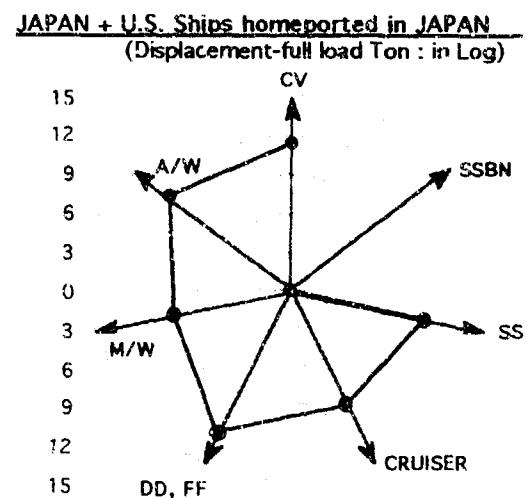
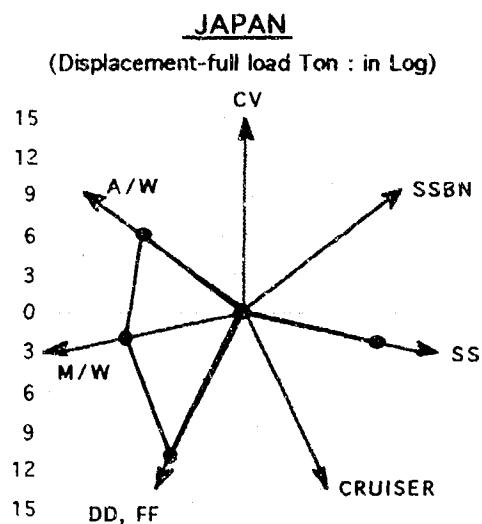


Figure 22
FLEET COMBINATION BETWEEN JAPAN AND U.S.
(Displacement, Full Load Ton: In Natural Log.)

together with the JMSDF which influence sea control in the East Asian Pacific sea area around the island of Japan. It is based on my assumption that approximately one-third of the U.S. Pacific Fleet may be viewed for this purpose.

A cruiser-destroyer-frigate group and an amphibious group of the U.S. Navy are homeported in Japan, as is one aircraft carrier. One aircraft carrier, two cruisers, three destroyers, three frigates, and six amphibious warfare ships are homeported in Japan at present. A combined maritime force between the JMSDF fleet and the U.S. ships homeported in Japan will have a better balanced fleet composition and capability than the JMSDF does by itself. That combined maritime force still lacks SSBN capabilities. Because Japan adheres to the "Three Non-nuclear Principals" as national policy, it is not expected for an SSBN to homeport in Japan. When U.S. ships homeported in Japan conduct operations together with the JMSDF, the U.S. ships supplement the missing air cover function of the JMSDF.

Next, a combined maritime force between the JMSDF and the U.S. Seventh Fleet will have a fleet composition like Figure 22. This maritime force has a completely well-balanced fleet composition. In terms of fleet composition, the U.S. Seventh Fleet is complementary to the JMSDF.

This result is consistent with the concept of maritime operations described in the "Guidelines for Japan-U.S. Defense Cooperation."⁹ The following outlines its concept: when an armed attack against Japan takes place, "the JMSDF and the U.S. Navy will jointly conduct maritime operations

⁹This is the report by the Subcommittee for Defense Cooperation, submitted to and approved by the Japan-U.S. Security Consultative Committee.

for the defense of surrounding waters and the protection of sea lanes of communication. The JMSDF will primarily conduct operations for the protection of major ports and straits in Japan; and anti-submarine operations, operations for the protection of ships and other operations in the surrounding waters. U.S. Navy Forces will support JMSDF operations and conduct operations, including those which may involve the use of task forces providing additional mobility and strike power, with the objective of repelling enemy forces."

While it might be hard to conclude that the JMSDF or Japan is complementary to the U.S. Navy and its physical assets, at least the following can be stated. With the physical assets the JMSDF has, it is obvious that the JMSDF can't perform as many maritime missions as the U.S. Navy. But the JMSDF can conduct substantial anti-submarine warfare operations in the sea area around Japan by using many highly efficient anti-submarine surface ships and anti-submarine maritime patrol aircraft. Needless to say, this JMSDF effort not only contributes to Japan's security directly, but also enhances the U.S. Navy's capability in the far east region. Because the Seventh Fleet has a vast area of responsibility, from the Kamchatka Peninsula of Russia to the Persian Gulf, if her burden around Japan is released by the JMSDF's effort, she can shift her assets to other areas.

F. U.S. MILITARY STRATEGY IN THE ASIA-PACIFIC REGION

The U.S. maritime doctrine or strategic concept is driven by the National Military Strategy of the U.S. which is effected by the U.S. president's National Security Strategy.

The collapse of the Soviet Union and the end of the Cold War has meant that the East-West confrontation that had keynoted the world military situation

for over 40 years has come to an end. Needless to say, this great change has forced a change in the U.S. National Security Strategy. A new U.S. National Security Strategy was announced in August 1991.

A few months later, in January 1992, the National Military Strategy of the U.S. was published. At the beginning of this strategy, it is stated that "Most significant is the shift from containing the spread of communism and deterring Soviet aggression to a more diverse, flexible strategy which is regionally oriented and capable of responding decisively to the challenges of this decade."¹⁰ This strategy is built upon the four foundations of Strategic Deterrence and Defense, Forward Presence, Crisis Response, and Reconstitution.¹¹ This strategy also states that the U.S. will deter and defend against strategic nuclear attacks as the U.S. has for the past forty years and also project a forward presence and provide crisis responses as fundamental parts of its regionally oriented strategy.

The U.S. remains an Asia-Pacific power with interests in East Asia. The U.S. Department of Defense has stated, "Despite the decade of change that we foresee, our regional interests in Asia will remain similar to those we have pursued in the past. With a total two-way transpacific trade exceeding 300 billion dollars annually, 50 percent more than our transatlantic trade, it is in our own best interest to help preserve peace and stability. The principal elements of our Asian strategy -- forward deployed forces, overseas bases, and bilateral security arrangements -- will remain valid and essential to

¹⁰The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P1

¹¹The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P6

maintaining regional stability, deterring aggression, and preserving U.S. interests."¹² U.S. interests in this region require a continuing commitment. Therefore forward presence forces in this region are essential to the U.S. Military Strategy. "Forward presence forces will be principally maritime. The U.S. plans to keep one aircraft carrier battle group and an amphibious ready group homeported in Japan and has developed new forward options not dependent upon U.S.'s former bases in the Philippines."¹³

G. COMPLEMENTARY TO THE U.S. NAVY

As seen in the new U.S. Military strategy, in spite of the great changes in the international situation, forward presence still remains as one of the four foundations of new U.S. Military strategy. This is because of the U.S. perception that over the past 45 years, the day-to-day presence of U.S. forces in regions vital to U.S. national interests has been key to averting crises and preventing war. "In addition to forces stationed overseas and afloat, forward presence includes periodic and rational deployments, access and storage agreements, combined exercises, security and humanitarian assistance, port visits, and military-to-military contacts."¹⁴

By considering this U.S. Military strategy, we can conclude that Japan or the JMSDF is complementary to U.S. Navy strategy. Japan provides bases and facilities and capabilities which accommodate CVs. "It is in the U.S. interest to

¹²A Strategic Framework for the Asian Pacific Rim; Looking Toward the 21st Century (Department of Defense, 1990) P8

¹³The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P22

¹⁴The National Military Strategy of the United States (Chairman Joint Chiefs of Staff) P7

maintain a forward deployed presence in Japan over the long-term for two reasons: the geostrategic location of bases and the cost effectiveness of U.S. presence compared to anywhere else."¹⁵

Therefore Japan contributes to the U.S.'s Forward presence.

H. COOPERATION IN NAVAL ACTIVITIES

It is important to understand the level of cooperative activities between the JMSDF and the U.S. Navy. From the U.S. perspective, cooperation is part of the U.S. extending a forward presence. It serves to promote better mutual understanding and close communications. As a result, it also serves to upgrade interoperability between forces. Therefore regular combined training and other types of cooperative activities are indispensable to ensure smooth cooperation of JMSDF-U.S. Navy actions in the event of any emergencies involving Japan.

The JMSDF has been involved in the following Japan-U.S. combined training activities (also see Table 7):

1. RIM OF THE PACIFIC (RIMPAC) EXERCISE is a comprehensive exercise projected by the U.S. 3rd Fleet and is conducted every other year in the eastern Pacific Ocean. Ships of foreign countries, such as Canada, Australia, and New Zealand, participate in this exercise. The JMSDF took part in RIMPAC in 1980 for the first time and has participated in every exercise since then. Eight DD's (Destroyer), one AOE (Fast Combat Support Ship), and eight P-3C's out of the JMSDF took part in RIMPAC '90.

¹⁵A Strategic Framework for the Asian Pacific Rim; Looking Toward the 21st Century (Department of Defense, 1990) P17

TABLE 7
Performance of JMSDF-U.S. Navy Combined Training in FY1991

Training Period	Date	Place	Participating Forces	U.S.	Outline
Special Anti- Submarine Training	May 8-12, 1991	Sea area extending south of Boso to east of Ogasawara Islands	5 vessels 7 aircraft (combined total)	4 vessels 14 aircraft (combined total)	Anti-submarine training, Air defense training, Electronic warfare training, etc.
Special Anti- Submarine Training	June 18-24, 1991	Sea area south- west of Kyushu	8 vessels 9 aircraft (combined total)	2 vessels 6 aircraft (combined total)	Anti-submarine training, Air defense training, Electronic warfare training, etc.
Special Anti- Submarine Training	August 24-28, 1991	Sea area south- west of Kyushu	8 vessels 8 aircraft (combined total)	2 vessels 5 aircraft (combined total)	Anti-submarine training, Air defense training, Electronic warfare training, etc.
Special Anti- Submarine Training	September 8-11, 1991	Sea area south- west of Kyushu	8 vessels 5 aircraft (combined total)	1 vessel 6 aircraft (combined total)	Anti-submarine training, Air defense training, Electronic warfare training, etc.
Special Anti- Submarine Training	November 8-15, 1991	Sea area south and east of Ionsue	15 vessels 90 aircraft (combined total)	17 vessels (including the aircraft carrier Independence, Lincoln) About 160 aircraft (combined total)	Anti-submarine training, Air defense training, Electronic warfare training, etc.
Special Mine-sweeping Training	February 15-27, 1992	Suganada Sea	25 vessels 26 aircraft (combined total)	4 aircraft (combined total)	Minesweeping training
Special Anti- Submarine Training	February 24-29, 1992	Sea area south- west of Kyushu	6 vessels 13 aircraft (combined total)	6 vessels 13 aircraft (combined total)	Anti-submarine training, Air defense training, Electronic warfare training, etc.
Special Exercise	March 15-28, 1992	U.S. Naval War College	20 from the JMSDF Staff Office, etc	About 50 from the 7th Fleet, U.S. Naval Forces, Japan, Headquarters, etc.	Training on coordination

Source: Defense of Japan (Defense Agency, Japan) P231

2. A JMSDF-U.S. Navy Combined Exercise is conducted in the sea area from Hawaii to California every other year when the RIMPAC exercise is not conducted. Three DD's and five P-3C's out of the JMSDF take part in this exercise.

3. Special Anti-Submarine Warfare Training is conducted several times each year in the sea area around Japan between the JMSDF and the U.S. Navy.

4. Special Mine-Sweeping Training is conducted yearly.

5. The JMSDF Annual Exercise is the biggest exercise in which almost all ships, aircraft, and personnel in the JMSDF are involved. As a part of this exercise, JMSDF-U.S. Navy combined training is conducted. A U.S. Navy aircraft carrier usually takes part in this exercise.

6. The first Japan-U.S. combined command post exercise was conducted in 1989 at the U.S. Naval War College and has been conducted yearly since then.

I. LEVEL OF COMPLEMENTARITY AND FUTURE TRENDS

It has been found that there is a high level of complementarity between the JMSDF and the U.S. Navy either in terms of fleet composition, military strategy, or cooperation in naval activities. Japan's complementary relationship with the U.S. will most likely continue in the future. Assuming that this complementary relationship continues, as I examined in Section II the JMSDF will probably not have sufficient financial resources in the future to enhance its naval forces over the current levels. However, if the complementary relationship with the U.S. continues, Japan will not need a balanced maritime force. It is also anticipated that Japan will continue to

maintain a defensive strategy and improve its current complementary relationship with the U.S..

On the other hand, the U.S. Navy considers that U.S. Navy forces can operate with other elements of joint or combined task forces, including allied forces and assets in order to respond to U.S. national needs. Also the U.S. itself may not prefer that Japan enhance its military beyond its current force level. The Department of Defense in the U.S. stated that "Increases in Japanese military strength undertaken to compensate for declining U.S. capabilities in the region could prove worrisome to regional nations, especially if they perceive Japan is acting independent of the U.S.-Japan security relationship."¹⁶ The U.S. stresses "the importance of maintaining interoperability in our military weapons systems by encouraging maximum procurement from the U.S., increasing technology flowback, and discouraging the development of non-complementary systems."¹⁷ Also in November 1991, the U.S. Secretary of Defense, the Honorable Richard Cheney, unveiled complementary defense cooperation as one principle of U.S. strategy for East Asia.

Taking into account the above factors, there is little likelihood for the JMSDF to take a separate path from the current complementary relationship with the U.S. Navy.

¹⁶A Strategic Framework for the Asian Pacific Rim: Looking Toward the 21st Century (Department of Defense, 1990) P6

¹⁷A Strategic Framework for the Asian Pacific Rim: Looking Toward the 21st Century (Department of Defense, 1990) P18

VI. CONCLUSION

As I stated at the outset, one of the primary research questions was "Does the JMCDF have the financial resources to improve its forces in the future?" Another question was "What has been and will be the level of complementarity between the JMSDF and the U.S. Navy?" For the first question, throughout Section II we find that if about 1 percent of GNP will be allocated to the JMSDF budget and GNP will continue to increase as in the past, and assuming that the total number of major ships is fixed like the current situation, it might be possible for the JMSDF to make larger and more modern ships without serious financial problems. When we take into account, however, the coming aging society and other social welfare issues, the JMSDF budget may not be allocated the same as it has in the past. The average real growth rate of the Japanese economy in the future might be lower than that of the past. The introduction of advanced technological systems to ships and/or aircraft will require substantive additional costs. This leads me to conclude that the JMSDF is not likely to be allocated enough financial resources to enhance its inventory much beyond its current force level. This situation tends to lead Japan to continue on a complementary relationship with the U.S..

With respect to the second question, the examination reveals that there is a high level of complementarity overall between the JMSDF and the U.S. Pacific Fleet. This relationship will most likely continue in the future.

Therefore it is concluded that the future direction of the JMSDF will be that of keeping an effective complementary relationship with that of the U.S. Navy.

APPENDIX A

BASIC POLICY FOR JAPAN'S NATIONAL DEFENSE

The objective of national defense is to prevent direct and indirect aggression, but once invaded, to repel such action, thereby preserving the independence and peace of Japan founded upon democratic principles.

To achieve this objective, the government of Japan hereby establishes the following principles:

1. To support the activities of the United Nations and promote international cooperation, thereby contributing to the realization of world peace.
2. To promote public welfare and enhance the people's love for the country, thereby establishing the sound basis essential to Japan's security.
3. To develop progressively the effective defense capabilities necessary for self-defense, with regard to the nation's resources and the prevailing domestic situation.
4. To deal with external aggression on the basis of the Japan-U.S. security arrangements, pending the effective functioning of the United Nations in the future in deterring and repelling such aggression.

Source : Defense of Japan (Defense Agency, Japan)

APPENDIX B

BRIEF ON JAPAN'S DEFENSE PROGRAMS POLICIES

1. First Defense Buildup Plan(FY1958-1960)
 - Constructing a fundamental ground defense capability in order to cope with the rapid reductions in U.S. ground forces stationed in Japan
 - Establishing maritime and air defense capability
3. Second Defense Buildup Plan(FY1962-1966)
 - Strengthening that defense potential to the point of capability in meeting conventional aggression on a scale no greater than localized conflict
3. Third Defense Buildup Plan(FY1967-1971)
 - Consolidation of the most effective defense potential capable of meeting conventional aggression on a scale no greater than localized conflict
4. Fourth Defense Buildup Plan(FY 1972-1976)
 - Following up the third plan
5. Mid-Term Defense Program(FY1986-1990)
 - to attain the level of defense capability laid down in the National Defense Program Outline (NDPO)
 - to upgrade the defense capability enough to match the international military situation and trends in the technological gains of other countries
 - the furtherance of systematically coordinated relations among the three self-defense forces and the demonstration of joint operational effects
6. New Mid-Term Defense Program (FY1991-1995)
 - to maintain efficiently the level of defense capability laid down in the NDPO
 - to maintain and enhance the credibility of the Japan-U.S. Security Arrangements
 - to maintain a well-balanced posture in all dimensions

Source : Defense of Japan (Defense Agency, Japan)

APPENDIX C

OUTLINE OF JAPAN'S DEFENSE BUILDUP FOR THE FUTURE

1. First of all, Japan will stick steadfastly to its exclusive defense policy under the peace constitution. At the same time, Japan, holding fast to the Japan-U.S. Security arrangements, will continue maintaining the basic defense policy it has pursued over the past years, including the moderate improvement of its defense capability.
2. The defense-related expenditure for each fiscal year during the enforcement period of the Mid-Term Defense Program is decided within the framework of required expenses set forth in this program. And the total amount of expenses is set as the actual ceiling of defense expenditure for the five years of the program that was scheduled to be prepared anew three years henceforth.
3. As regards defense-related expenditures in and after fiscal 1991, it will be decided by the time the Mid-Term Defense Program is completed, in accordance with Japan's basic policy as a peace-loving nation by taking into consideration factors such as the international situation, and economic and fiscal situations.
4. Furthermore, considering that the decision on "Defense Buildup for the Time Being" in 1976 has so far played a vital role as a guideline for the defense buildup expenses, the government, with this well in mind, will continue holding in high esteem the spirit of the decision calling for a moderate defense buildup.

Source: Summary of Defense of Japan 1988 (Defense Agency, Japan) P89

APPENDIX D
CHANGES IN JAPAN'S DEFENSE EXPENDITURES

(Unit: 100 million Yen. %)

FY	1958	1959	1960	1961	1962	1963	1964	1965
Defence (DE)	1,485	1,560	1,569	1,803	2,085	2,412	2,751	3,014
GNP	102,470	107,620	127,480	156,200	176,700	203,900	240,700	281,600
BUDGET	13,121	14,192	15,697	19,528	24,268	28,500	32,554	36,581
Ratio(%)								
(1)DE/GNP	1.45%	1.45%	1.23%	1.15%	1.18%	1.18%	1.14%	1.07%
(2)DE/BUDGET	11.32%	10.99%	10.00%	9.23%	8.59%	8.46%	8.45%	8.24%
FY	1966	1967	1968	1969	1970	1971	1972	1973
Defence (DE)	3,407	3,809	4,221	4,838	5,695	6,709	8,002	9,355
GNP	308,500	409,500	478,400	578,600	724,400	843,200	905,500	1,098,000
BUDGET	43,143	49,509	58,185	67,395	79,497	94,143	114,677	142,841
Ratio(%)								
(1)DE/GNP	1.10%	0.93%	0.88%	0.84%	0.79%	0.80%	0.88%	0.85%
(2)DE/BUDGET	7.90%	7.69%	7.25%	7.18%	7.16%	7.13%	6.98%	6.55%
FY	1974	1975	1976	1977	1978	1979	1980	1981
Defence (DE)	10,930	13,273	15,124	16,906	19,010	20,945	22,302	24,000
GNP	1,315,000	1,585,000	1,681,000	1,928,500	2,106,000	2,320,000	2,478,000	2,648,000
(2)DE/BUDGET	170,994	212,888	242,960	285,143	342,950	386,001	425,888	467,881
Ratio(%)								
(1)DE/GNP	0.83%	0.84%	0.90%	0.88%	0.90%	0.90%	0.90%	0.91%
(2)DE/BUDGET	6.39%	6.23%	6.22%	5.93%	5.54%	5.43%	5.24%	5.13%
FY	1982	1983	1984	1985	1986	1987	1988	1989
Defence (DE)	25,861	27,542	29,346	31,371	33,435	35,174	37,003	39,198
GNP	2,772,000	2,817,000	2,960,000	3,146,000	3,367,000	3,504,000	3,652,000	3,897,000
BUDGET	496,808	503,796	506,272	524,996	540,886	541,010	566,997	604,142
Ratio(%)								
(1)DE/GNP	0.93%	0.98%	0.99%	0.997%	0.993%	1.004%	1.013%	1.006%
(2)DE/BUDGET	5.21%	5.47%	5.80%	5.98%	6.18%	6.50%	6.53%	6.49%
FY	1990	1991	1992					
Defence (DE)	41,593	43,860	45,518					
GNP	4,172,000	4,596,000	4,837,000					
BUDGET	662,368	703,474	722,180					
Ratio(%)								
(1)DE/GNP	0.997%	0.954%	0.941%					
(2)DE/BUDGET	6.28%	6.23%	6.30%					

Source: Boei Handbook (Asagumo Shinbunsha) P228-230

note: 1. BUDGET is shown by Original Budget.

2. GNP is shown by initial forecasted GNP.

APPENDIX E

CHANGE IN JAPAN'S MAJOR GENERAL ACCOUNT EXPENDITURES (Original Budget)

(Unit: 100 million Yen Expressed in Nominal Term)

Fiscal Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Social Welfare	21,154	28,919	39,282	48,075	56,919	67,811	76,266	82,124	88,369	90,848	91,398
Education & Science	15,708	19,633	26,401	30,292	34,301	38,516	42,997	45,250	47,420	48,637	48,186
Defense	9,355	10,930	13,273	15,124	16,906	19,010	20,945	22,302	24,000	25,861	27,542
Public Works	28,408	28,407	29,095	35,272	42,810	54,501	65,401	66,554	66,554	66,554	66,554
Others	68,221	83,105	104,837	114,156	134,207	163,112	180,392	209,659	241,537	264,906	270,116
Total	142,846	170,994	212,888	242,960	265,143	342,950	386,001	425,889	467,880	496,806	503,796

Fiscal Year	1984	1985	1986	1987	1988	1989	1990	1991	1992
Social Welfare	93,210	95,736	98,346	100,896	103,845	108,947	116,148	122,122	127,374
Education & Science	48,665	48,409	48,445	48,497	48,581	49,371	51,129	53,944	56,834
Defense	29,346	31,371	33,435	35,174	37,003	39,198	41,593	43,870	45,518
Public Works	65,200	63,689	62,233	60,824	60,824	61,974	62,147	65,897	69,409
Others	269,849	285,792	298,426	295,618	316,744	344,653	391,350	417,641	412,212
Total	596,270	524,997	540,885	541,009	566,997	604,143	662,367	703,474	71,347

Source: Kaijijitai Yosan Jimuteiyo (Kaijobakuryokanbu)

APPENDIX F

TRENDS IN JAPAN'S DEFENSE EXPENDITURES (By Expenses)

(Unit: 1000Yen, Expressed in nominal term)

FISCAL YEAR	1974	1975	1976	1977	1978	1979	1980
PERSONNEL & PROVISIONS	529,646,420	702,088,220	847,656,901	930,391,598	1,034,505,944	1,076,450,985	1,099,971,831
CURRENT-YEAR MATERIAL	304,785,726	352,767,151	372,498,221	408,649,106	468,851,617	572,411,176	607,685,174
CURRENT-YEAR OBLIGATORY OUTLAY	258,591,749	272,466,501	292,195,474	351,572,621	397,672,032	445,627,130	522,339,473
TOTAL	1,093,023,895	1,327,321,872	1,512,350,596	1,690,613,325	1,901,029,593	2,094,489,291	2,230,202,478
FISCAL YEAR	1981	1982	1983	1984	1985	1986	1987
PERSONNEL & PROVISIONS	1,144,369,784	1,205,311,648	1,225,824,750	1,309,441,289	1,413,952,438	1,508,551,282	1,543,867,016
CURRENT-YEAR MATERIAL	631,062,141	679,339,320	673,185,236	642,070,591	649,725,434	665,137,387	708,593,611
CURRENT-YEAR OBLIGATORY OUTLAY	624,586,984	701,484,503	855,224,397	983,132,904	1,073,470,276	1,169,860,401	1,264,973,154
TOTAL	2,460,018,909	2,586,135,471	2,754,234,383	2,934,644,784	3,137,148,148	3,343,549,070	3,517,433,781
FISCAL YEAR	1988	1989	1990	1991			
PERSONNEL & PROVISIONS	1,578,864,769	1,613,580,741	1,668,028,636	1,756,766,471			
CURRENT-YEAR MATERIAL	770,487,217	838,074,880	906,434,203	929,152,825			
CURRENT-YEAR OBLIGATORY OUTLAY	1,350,975,954	1,467,178,674	1,582,878,247	1,700,115,710			
TOTAL	3,700,327,940	3,918,834,295	4,159,341,086	4,386,035,006			

Source: Kaijōjiteitai Yosan Jituiteiyo (Kaijobakuryōkanbu)

APPENDIX G

TRENDS IN JAPAN'S DEFENSE EXPENDITURES (by Organization)

(Unit: 1000Yen. Expressed in nominal term)

FISCAL YEAR	1974	1975	1976	1977	1978	1979	1980
JGSDF BUDGET	436,063,610	556,630,000	651,653,279	714,429,431	799,065,903	859,871,056	887,274,653
JMSDF BUDGET	238,932,567	268,047,521	314,051,000	357,156,190	421,108,858	454,003,847	509,657,110
JASDF BUDGET	279,999,635	335,587,153	392,179,754	413,594,535	437,841,542	482,653,097	514,435,291
OTHERS BUDGET	137,968,083	167,057,216	184,466,563	205,433,169	243,013,290	297,961,291	318,835,424
TOTAL	1,093,323,895	1,327,321,872	1,512,350,596	1,690,613,325	1,901,029,593	2,094,489,291	2,230,202,473
FISCAL YEAR	1981	1982	1983	1984	1985	1986	1987
JGSDF BUDGET	944,307,702	966,020,584	1,027,337,475	1,077,538,962	1,161,200,110	1,249,516,952	1,286,199,804
JMSDF BUDGET	553,162,912	602,902,259	654,037,117	705,983,574	733,265,575	793,286,424	861,548,204
JASDF BUDGET	564,635,120	633,668,319	699,426,640	758,720,730	827,518,662	870,559,587	998,204,910
OTHERS BUDGET	237,913,175	363,544,309	373,433,151	392,401,518	415,162,801	430,186,107	471,400,863
TOTAL	2,400,018,909	2,586,155,471	2,754,234,383	2,934,644,784	3,137,148,148	3,345,349,070	3,517,433,781
FISCAL YEAR	1968	1989	1990	1991	1992		
JGSDF BUDGET	1,330,266,211	1,379,272,640	1,474,852,513	1,563,154,276	1,633,400,000		
JMSDF BUDGET	94,483	971,559,636	976,025,583	1,085,383,204	1,100,200,000		
JASDF BUDGET	934,169,264	1,030,049,496	1,121,705,999	1,118,216,270	1,153,200,000		
OTHERS BUDGET	495,143,542	537,952,323	586,759,991	619,279,256	665,100,000		
TOTAL	3,700,327,940	3,918,834,295	4,155,341,036	4,386,035,006	4,551,700,000		

Source: Kaijōjiteitai Yosan Jimureiyc (Kaijōbakyōkanbu)

APPENDIX H

TRENDS IN EACH SERVICE'S BUDGET AS A PERCENTAGE OF GNP
(by Organization) IN JAPAN

FISCAL YEAR	1974	1975	1976	1977	1978	1979
JGSDF BUDGET	0.352%	0.351%	0.388%	0.370%	0.379%	0.371%
JMSDF BUDGET	0.182%	0.169%	0.187%	0.185%	0.200%	0.196%
JASDF BUDGET	0.213%	0.212%	0.215%	0.214%	0.208%	0.208%
OTHER'S BUDGET	0.105%	0.105%	0.110%	0.107%	0.115%	0.128%
TOTAL	0.831%	0.837%	0.900%	0.877%	0.903%	0.903%

FISCAL YEAR	1980	1981	1982	1983	1984	1985
JGSDF BUDGET	0.358%	0.357%	0.356%	0.365%	0.364%	0.369%
JMSDF BUDGET	0.206%	0.209%	0.217%	0.232%	0.239%	0.233%
JASDF BUDGET	0.208%	0.213%	0.229%	0.248%	0.256%	0.263%
OTHER'S BUDGET	0.129%	0.128%	0.131%	0.133%	0.133%	0.132%
TOTAL	0.900%	0.906%	0.933%	0.978%	0.991%	0.997%

FISCAL YEAR	1986	1987	1988	1989	1990	1991
JGSDF BUDGET	0.371%	0.367%	0.364%	0.354%	0.354%	0.340%
JMSDF BUDGET	0.236%	0.246%	0.258%	0.249%	0.234%	0.236%
JASDF BUDGET	0.259%	0.256%	0.256%	0.264%	0.269%	0.243%
OTHER'S BUDGET	0.128%	0.135%	0.136%	0.138%	0.141%	0.135%
TOTAL	0.993%	1.004%	1.013%	1.006%	0.997%	0.954%

Source : Kaijijiteitai Yosan Jimuteiyo (Kaijobakuryokanbu)

APPENDIX I

TRENDS IN JMSDF BUDGET (by Expenses)

(Unit : 1000Yen, Expressed in nominal term)

FISCAL YEAR		1974	1975	1976	1977	1978
PERSONNEL & PROVISIONS	94,699,262	122,846,066	149,937,055	163,262,553	179,762,677	
CURRENT-YEAR OBLIGATORY OUTLAY	88,474,142	78,643,333	93,336,011	117,989,670	156,902,314	
CURRENT-YEAR MATERIAL	55,819,163	66,558,122	70,777,934	75,903,867	84,443,867	
TOTAL	238,992,567	268,047,521	314,051,000	357,156,190	421,108,858	

FISCAL YEAR		1979	1980	1981	1982	1983
PERSONNEL & PROVISIONS	185,334,281	191,297,957	203,530,509	215,986,573	221,455,053	
CURRENT-YEAR OBLIGATORY OUTLAY	166,073,958	208,331,903	235,123,960	256,648,036	307,216,830	
CURRENT-YEAR MATERIAL	102,595,608	110,027,250	114,508,443	126,267,650	125,365,234	
TOTAL	454,003,847	509,657,110	553,162,912	602,902,259	654,037,117	

FISCAL YEAR		1984	1985	1986	1987	1988
PERSONNEL & PROVISIONS	241,612,693	258,862,767	282,669,525	301,194,097	310,677,258	
CURRENT-YEAR OBLIGATORY OUTLAY	351,878,604	358,749,604	392,317,167	437,329,163	469,198,578	
CURRENT-YEAR MATERIAL	112,492,277	115,654,204	118,299,332	123,024,944	140,872,987	
TOTAL	705,983,574	733,266,575	793,286,424	861,548,204	940,748,823	

FISCAL YEAR		1989	1990	1991	1992
PERSONNEL & PROVISIONS	311,969,791	317,413,953	331,612,132	352,100,000	
CURRENT-YEAR OBLIGATORY OUTLAY	504,890,583	487,397,898	581,473,610	583,400,000	
CURRENT-YEAR MATERIAL	154,699,462	171,210,732	172,297,462	168,500,000	
TOTAL	971,559,636	976,022,583	1,085,383,204	1,104,000,000	

Source : Kaijōjikkai Yosan Jumitelyo (Kaijōjakkuryōkanbu)

APPENDIX J
TRINITY IN JMSDF BUDGET (by 3 Components)

(Unit: 1000 Yen. Expressed in nominal term)

FISCAL YEAR		1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
1. Person & Provisions	3,731,705	5,551,961	6,698,630	7,106,255	8,121,650	9,586,280	11,382,919	13,734,107	16,024,315	18,964,681	**
2. Frontline	**	**	**	**	**	**	**	**	**	**	**
3. Others	**	**	**	**	**	**	**	**	**	**	**
Sub-Total	5,544,680	8,165,571	5,200,543	7,133,104	11,267,817	13,480,314	15,014,571	14,436,714	13,305,673	16,520,237	**
Aircraft	5,544,680	7,864,378	5,200,543	6,711,416	8,195,834	9,467,712	9,005,970	6,967,694	9,526,228	10,717,186	**
Armament	0	0	0	0	0	0	0	0	0	0	0
Others	9,137,007	0	0	0	0	0	0	0	0	0	0
TOTAL	19,012,337	22,854,539	21,922,109	25,669,800	32,203,028	36,591,900	42,423,026	47,456,256	51,834,961	58,041,531	**
FISCAL YEAR		1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
1. Person & Provisions	22,102,399	25,731,298	26,931,137	33,429,846	36,523,516	45,593,607	54,236,688	64,236,981	76,188,068	94,699,292	**
2. Frontline	**	**	**	**	**	**	**	**	**	**	**
3. Others	**	**	**	**	**	**	**	**	**	**	**
Sub-Total	19,333,305	20,938,770	23,371,295	27,669,137	36,850,311	51,097,600	64,076,797	74,074,522	76,220,965	76,302,511	**
Aircraft	13,627,606	14,836,034	17,620,429	18,751,384	21,071,000	22,815,329	30,463,005	35,389,449	36,373,559	43,439,980	**
Armament	4,659,427	3,348,111	3,197,407	6,314,583	13,020,026	25,359,498	30,001,167	34,986,618	35,519,312	28,196,539	**
Others	2,216,272	2,645,625	2,653,459	2,603,170	2,749,249	2,952,773	3,612,622	3,718,455	4,128,094	4,666,024	**
TOTAL	25,456,287	28,914,059	32,693,402	36,170,624	39,033,417	42,527,984	43,909,630	49,491,948	60,043,894	67,990,764	**
1. Person & Provisions	68,061,990	75,044,167	84,935,854	97,269,607	114,407,344	139,281,191	162,220,095	187,863,151	214,452,921	238,992,597	**
FISCAL YEAR		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1. Person & Provisions	122,886,066	149,937,055	16,262,653	179,762,677	185,334,281	191,297,957	203,530,509	219,986,573	221,455,053	241,612,683	**
2. Frontline	117,101,727	143,507,633	156,835,786	172,738,026	178,487,242	183,637,108	195,220,126	211,933,374	213,610,019	233,337,355	**
3. Others	5,744,339	6,429,422	6,426,867	7,924,651	6,847,039	7,604,849	8,310,383	8,033,199	8,275,328	8,275,328	**
Sub-Total	67,798,003	79,282,791	94,825,664	122,036,601	129,885,932	159,736,698	184,520,099	205,031,650	221,606,414	280,595,496	**
Aircraft	30,555,971	45,435,618	54,778,854	80,355,593	99,752,334	116,159,631	129,848,344	129,010,634	145,333,804	167,256,728	**
Armament	32,013,465	27,302,655	32,247,862	34,760,293	29,969,429	33,770,764	44,384,208	61,917,254	63,562,177	94,408,117	**
Others	5,278,567	6,544,418	7,738,948	8,920,715	9,164,129	9,776,303	10,287,547	14,103,762	15,510,433	18,840,651	**
TOTAL	77,403,452	84,831,154	90,067,873	119,309,580	138,783,614	158,632,455	165,112,304	177,884,036	207,975,650	183,775,385	**
1. Person & Provisions	268,047,354	314,051,000	357,156,190	421,108,858	454,003,847	509,657,110	553,62,912	602,905,259	654,037,117	705,983,574	**
FISCAL YEAR		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
1. Person & Provisions	258,892,767	282,669,921	301,155,000	310,677,258	311,969,791	317,413,952	331,612,132	352,010,892	333,319,513	344,936,847	**
2. Frontline	250,243,013	273,905,603	292,299,296	301,411,255	302,651,419	307,889,767	323,319,513	344,936,847	344,936,847	344,936,847	344,936,847
3. Others	8,619,754	8,764,322	8,988,821	9,266,003	9,318,332	9,524,246	8,292,619	7,120,045	7,120,045	7,120,045	7,120,045
Sub-Total	276,353,331	313,741,813	338,066,876	383,389,887	365,232,202	317,391,989	424,201,821	367,788,428	367,788,428	367,788,428	367,788,428
Aircraft	167,226,780	173,61,134	171,183,059	197,900,806	186,803,025	140,526,832	190,080,170	166,575,259	166,575,259	166,575,259	166,575,259
Armament	89,744,468	113,136,954	136,201,730	154,620,946	142,162,227	133,067,936	181,779,526	155,759,020	155,759,020	155,759,020	155,759,020
Others	21,424,063	26,843,725	30,679,887	31,068,135	36,626,690	43,792,221	52,342,125	45,434,149	45,434,149	45,434,149	45,434,149
TOTAL	332,266,575	393,26,424	861,154,204	940,748,823	971,559,836	976,022,583	1,045,383,294	1,100,154,410	1,100,154,410	1,100,154,410	1,100,154,410

Source: Karuigata, Yosan Jimutero (Kaijōbakuryōkanbu)

APPENDIX K

INSIDE SHUTTERBUILDING CO. ST (DE, DD, DDC, SS)

2. **Malibayat** (asap litwelyo (kalibakuryokanbu)

APPENDIX K (cont'd)

Fiscal Year	Type	Ship Name	Ton	Total Real Value		Nominal Value (Unit: 1000Yen)	Total Nominal Value	1971	1972	1973
				1974	1975					
1968 DDH	IHAKUNA	4,700	20,532,027	9,109,710	732,553	1,727,605	897,605	4,241,007	1,510,940	
1968 DE	AYASE	1,430	7,510,484	3,226,378	266,579	313,839	1,921,342	724,598		
1968 DE	IMUKIMA	1,470	7,510,484	3,226,378	266,579	313,839	1,921,342	724,598		
1968 SS	MAKISHO	1,850	14,194,970	6,064,207	718,713	1,236,951	2,340,968	1,767,575		
1969 DD	AKUMO	2,150	11,206,156	5,143,336	455,751	504,262	2,903,622	1,284,701		
1969 DE	TOKATTI	1,470	7,968,508	3,650,927	313,957	380,217	2,136,358	820,385		
1969 SS	ISOSHIO	1,850	14,740,110	6,713,264	708,911	1,438,083	2,617,332	1,948,918		
1970 DDH	HIEL	4,700	20,746,106	10,981,532		228,053	1,798,761	4,541,999	1,534,455	2,878,264
1970 DE	IWASE	1,470	9,095,679	4,235,974		346,826	2,344,680	1,544,458		
1970 DE	CHITOSE	1,480	8,570,139	4,249,145		346,826	475,980	2,392,618	1,033,711	
1970 SS	NARUSHIO	1,850	14,571,088	7,188,735		798,284	1,532,003	2,776,918	2,081,930	
						1971	1972	1973	1974	1975
1971 DDG	TACHIKAZE	3,850	31,198,660	18,488,161	665,045	4,274,562	3,756,677	6,298,103	3,493,774	
1971 DD	ASAGIRYO	2,150	11,625,293	6,229,048	536,537	639,850	3,404,700	1,627,961		
1971 DE	NITOGYO	1,470	8,365,993	4,372,623	338,766	2,454,918	1,579,039			
1971 SS	KUROSHIO	1,850	13,774,589	7,565,595	797,643	2,367,046	2,187,619	2,213,297		
1972 DE	TESHIO	1,500	8,053,066	4,723,877		420,351	2,632,401	1,670,675		
1972 DE	YOSHINO	1,500	8,053,066	4,723,877		420,851	2,632,401	1,670,675		
1972 DE	KUMANNO	1,500	7,316,108	4,717,693		420,851	482,644	2,678,840	1,135,358	
1972 SS	TAKASHO	1,850	13,949,194	8,554,981	971,734	2,90,053	2,185,889	2,477,305		
						1973	1974	1975	1976	1977
1973 DDG	ASA KAZE	3,850	40,308,987	30,136,794	1,932,953	4,633,867	4,312,267	4,781,539	9,173,913	5,282,241
1973 DE	NOOSHIO	1,500	10,949,113	8,131,297	466,991	583,083	1,065,161	3,980,016	2,036,046	
1973 SS	YAESHO	1,850	20,705,002	15,232,172	964,898	701,612	4,793,300	4,353,327	4,191,035	
1974 DD	YUGUMO	2,150	17,157,833	12,987,231		1,490,478	1,804,465	5,233,676	4,459,312	
1975 DDH	SHIRANE	5,200	4,666,371	39,100,797			369,250	10,368,220	4,444,308	14,933,687
1975 SS	YUISHO	2,200	28,987,971	23,714,656			256,064	5,355,220	6,474,904	4,859,338
						1976	1977	1978	1981	1982
1976 DDH	KURAMA	5,200	48,869,649	42,018,626	981,653	8,669,666	3,703,481	15,945,356	12,716,670	
1977 DD	HATSUYUKI	2,950	32,884,496	29,306,275		290,492	7,339,468	3,850,824	13,121,976	4,713,515
1977 DE	ISHIKARI	1,290	14,068,471	12,234,004		63,138	3,146,710	5,820,022	3,203,864	
1977 SS	MOCHISHO	2,200	29,315,454	25,576,592		390,362	12,578,885	2,820,052	9,787,583	
1978 DDG	SAWAKAZE	3,950	46,479,217	4,379,073			1,069,455	10,219,737	8,989,744	17,371,400
1978 DD	SHIRAYUKI	2,950	30,725,065	28,143,950			570,492	6,413,630	4,291,371	11,977,391
1978 SS	SETOSHIO	2,200	29,175,424	26,319,941			297,361	9,162,073	6,709,320	10,151,185

APPENDIX K (cont'd)

Fiscal Year	Type	Ship Name	Ton (Standard)	Total Real Value		Total Nominal Value		Nominal Value		1954
				£1985 Base (Unit: 1000 £m)	Nominal Value (Unit: 1000 £m)	1979	1980	1981	1982	
1975 DD	MINEYUKI	2,950	32,921,674	30,901,596	825,214	5,178,194	12,405,573	4,902,518	1,955	
1976 DD	SAWAYUKI	2,950	32,921,674	30,901,596	825,214	5,178,194	12,405,573	4,902,518		
1979 DD	HAMAYUKI	2,950	32,921,674	30,901,596	825,214	5,178,194	12,405,573	4,902,518		
1973 DE	YUBARI	1,470	16,396,047	15,308,907	534,453	5,418,135	6,885,705	2,370,664		
1976 SS	OKISHO	2,200	27,925,058	27,817,989	273,415	12,468,179	6,930,569	6,183,826		
1980 DD	ISOTOKI	2,950	33,227,788	31,960,088		887,625	7,878,073	5,521,568	12,384,745	5,288,077
1980 DD	HARUYUKI	2,950	33,227,788	31,960,088		887,625	7,878,073	5,521,568	12,384,745	5,288,077
1980 DE	YUBETSU	1,470	17,431,082	16,592,106		691,606	5,878,568	6,974,888	3,046,744	
1980 SS	NADASHO	2,250	31,175,098	29,551,456		834,303	14,189,371	8,483,377	6,044,695	
1981 DD	HA AKAZE	4,600	62,670,571	61,197,355		4,959,518	9,607,821	13,243,892	23,895,175	9,490,849
1981 DD	YAMAYUKI	3,050	34,437,168	33,780,951		587,100	5,272,095	5,871,515	15,807,428	6,242,813
1981 DD	MATSUYUKI	3,050	34,437,168	33,780,951		587,100	5,272,095	5,871,515	15,807,428	6,242,813
1981 SS	HAMASHO	2,250	31,724,905	30,768,117		463,729	8,712,259	12,039,065	9,582,116	
1982 DD	SETOYUKI	3,050	38,052,103	37,982,943	703,675	6,190,439	5,050,870	18,780,033	7,157,925	1982
1982 DD	ASAYUKI	3,050	38,022,103	37,982,943	703,675	6,190,439	5,050,870	18,780,033	7,157,925	
1982 DC	SHIMAYUKI	3,050	38,022,103	37,982,943	703,675	6,190,439	5,050,870	18,780,033	7,157,925	
1982 SS	AKISHO	2,250	32,545,862	32,151,497	353,186	8,348,492	11,639,945	11,809,874		
1983 DD	SHIMAKAZE	4,650	64,954,160	65,535,208		1,244,219	10,592,831	12,177,933	29,205,115	12,424,900
1983 DD	ASAGIRI	3,500	40,439,168	40,085,830		71,636	5,361,632	5,716,837	21,087,196	8,648,337
1983 SS	TAKEASHO	2,250	29,200,966	29,380,163		48,672	7,228,888	9,162,809	12,939,794	
1984 DD	YAMAGIRI	3,500	37,258,776	37,933,090			72,971	3,432,504	6,645,920	19,926,320
1984 DD	YUGIRI	3,500	37,258,776	37,933,090			72,971	3,432,504	6,645,920	19,926,320
1984 DC	AMAGIRI	3,500	37,258,776	37,933,090			72,971	3,432,504	6,645,920	19,926,320
1984 SS	YUKISHO	2,250	29,739,792	30,194,849		41	1	6,924,745	9,295,145	7,855,175
1985								1985		1991
1985 DD	HAMAGIRI	3,550	38,995,839	40,049,732	60,113	3,181,249	7,298,736	19,381,938	9,627,676	
1985 DC	SETOYUKI	3,550	38,995,839	40,049,732	60,113	3,181,249	7,298,736	19,381,938	9,627,676	
1985 DD	SAWAGIRI	3,550	38,995,839	40,049,732	60,113	3,181,249	7,298,736	19,381,938	9,627,676	
1985 SS	SACHASHO	2,250	30,636,036	31,308,311	82,301	7,606,108	10,766,115	12,853,787		
1986 DD	UMISIRI	3,550	38,674,024	40,477,713		37,669	2,601,555	7,117,054	22,067,985	8,553,455
1986 DE	ABUKUMA	2,000	23,609,808	24,341,835		240,222	3,756,590	11,250,941	9,094,082	
1986 DE	JINTSUI	2,000	23,609,808	24,341,835		240,222	3,756,590	11,250,941	9,094,082	
1986 SS	HAMASHO	2,450	37,402,606	38,997,793		148,808	2,836,863	12,623,798	13,535,700	9,852,926
1987 DE	OOTOODO	2,000	22,750,956	23,668,376			193,460	2,851,470	11,859,001	9,064,445
1987 DE	SENDAI	2,000	22,750,956	23,668,376			193,460	2,851,470	11,859,001	9,064,445
1987 SS	NATSUSHO	2,450	35,477,370	37,722,224			166,930	10,604,993	10,842,613	15,611,688

APPENDIX K (cont'd)

Fiscal Year	Type	Unit Name	Tan (Standard)	Total Real Value FY 1985 Base (Unit: 1000Yen)	Nominal Value (Unit: 1000Yen)	Total Nominal Value				
						1988	1989	1990	1991	1992
1988 DDG	KONGO	7,200	113,380,204	122,274,218	3,328,519	26,250,031	23,901,616	59,791,769	15,002,643	
1988 SS		2,400	35,339,722	37,947,987	121,544	7,862,881	14,146,926	15,816,616		
1989 DE		1,900	22,966,502	25,058,244	156,837	2,974,134	12,431,758	9,495,515		
1989 DF		1,900	22,966,502	23,582,244	156,837	2,974,134	12,431,758	9,495,515		
1989 SS		2,450	35,819,834	39,038,357	135,865	7,573,920	13,585,419	17,763,093		
1990 DDG		7,200	116,951,534	129,212,919		3,403,681	21,101,827	25,337,932	63,521,762	15,847,607
1990 SS		2,450	35,975,840	39,630,120		97,157	10,864,256	11,009,393	17,659,344	
						1991	1992	1993	1994	1995
1991 DDG		7,200	109,987,409	122,672,009	3,021,413	19,518,092	23,744,641	60,786,954	15,600,869	
1991 DD		4,400	54,485,316	60,930,352	513,490	5,783,318	9,553,024	32,378,636	12,690,184	

APPENDIX L

JMSDF SHIPBUILDING CCST (EXCEPT DE, DD, DDG, SS)

Fiscal Year	Type	SHIP NAME	TON (Standard)	Total		Nominal Value (Unit: 1000Yen)	Nominal Value (Unit: 1000Yen)
				Total Real Value FY1985	Total Real Value FY1984		
1964 PT	PT	HIODORI	480	2,043,892	637,816	258,358	399,458
1964 MSC	MSC	RISHIRI	340	1,807,224	583,734	196,073	387,661
1964 MSC	MSC	REBIN	340	1,807,224	583,734	196,073	387,661
1965 MSC	MSC	AMA	340	1,882,471	601,262	206,977	394,285
1965 MSC	MSC	YAMABIKI	340	1,882,471	601,262	206,977	394,285
1965 MSC	MSC	MINASE	340	1,883,726	598,527	204,640	393,887
1965 ASH	ASH	NO-6	45	463,135	145,645	59,674	85,971
1966 MSC	MSC	IBUKI	340	1,739,709	603,466	205,113	398,333
1966 MSC	MSC	KATSURA	340	1,739,709	603,466	205,113	398,333
1967 MSC	MSC	TAKAHASHI	320	2,653,048	985,287	190,547	241,932
1967 MSC	MSC	YAMADA	380	2,622,346	973,937	187,737	239,123
1967 ASR	ASR	FUJISHIMA	1,500	3,461,235	1,277,333	322,060	392,234
1967 ATE	ATE	AZUMA	2,000	4,617,798	1,723,536	271,329	294,860
1967 ATE	ATE	AKASI	1,500	2,884,478	1,050,855	353,376	463,333
						1967	1959
1968 MSC	MSC	MATAKE	380	2,457,949	958,477	188,686	240,074
1968 MSC	MSC	UTONE	390	2,437,949	963,150	188,665	240,074
1969 MSC	MSC	AWAJI	380	2,671,607	1,017,283	102,266	984,987
1969 MSC	MSC	TOSHI	380	2,671,607	1,087,293	102,236	984,987
1969 MST	MST	HAYASE	2,000	5,941,508	2,445,097	263,028	1,340,423
1969 MMIC	MMIC	SOYA	2,000	2,520,426	3,096,749	201,666	1,995,496
1969 PT	PT	NO-11	100	2,118,830	869,902	295,633	573,269
1970 MSC	MSC	TEURI	380	2,885,496	1,235,505	157,124	1,277,131
1970 MSC	MSC	MUROTSU	380	2,815,996	1,235,505	107,922	1,122,131
1970 PT	PT	NO-12	100	2,225,373	946,856	207,398	739,129
1970 LST	LST	ATSUMI	1,550	4,228,878	1,879,905	245,100	508,671
1970 LST	LST	NO-103	500	859,306	363,770	117,501	246,539
						1970	1971
1971 MSC	MSC	TASHIRO	380	2,888,638	1,349,630	111,362	764,260
1971 MSC	MSC	MURATO	380	2,888,638	1,349,630	114,362	470,978
1971 MSB	MSB	NO-1	50	723,956	229,191	68,064	261,127
1971 MSB	MSB	NO-6	50	591,870	315,166	56,389	259,777
1971 PT	PT	NO-13	100	2,359,584	962,864	323,139	739,723
1971 YAS	YAS	NO-104	500	350,336	183,077	115,759	267,338
							1974

Source : Kaijōjitei Yosan Jūmuisei (Kaijōbukuryōkanbu)

APPENDIX I. (cont'd.)

Fiscal Year	Type	Ship Name	TON (Standard)	Total		Nominal Value (Unit: 1000Yen)	Nominal Value (Unit: 1000Yen)	Nominal Value (Unit: 1000Yen)	Nominal Value (Unit: 1000Yen)
				Res. Value FY1985	Res. Value FY1985				
1972 MSC		TAKANE	380	3,009,952	1,535,158	1370	1,921	1972	1973
1972 MSC		MITSUKI	380	3,009,952	1,535,168	138,039	842,775	554,354	554,354
1972 MSC	NO-9		50	639,493	319,969	138,039	842,775	554,354	
1972 MBS	NO-10		50	639,493	319,969	48,803	271,166		
1972 MBS	NO-11		100	2,391,148	1,146,896	48,803	271,166		
1972 PT		MURABA	2,000	6,164,231	3,268,432	379,752	761,144		
1972 LST		MOTORU	1,500	3,809,858	1,844,533	309,138	813,038	2,145,741	
1972 LST	NO-12		500	1,947,274	503,595	146,656	356,933		
1972 YA	NO-13		500	2,739,152	1,563,956	153,223	1,084,495	516,238	516,238
1973 MSC	YOKOTE		380	2,739,152	1,563,956	153,223	1,084,495	516,238	
1973 MSC	SAKATE		380	2,739,152	1,563,956	55,662	293,285		
1973 MBS	NO-14		50	649,105	355,547	55,662	293,285		
1973 MBS	NO-15		50	645,105	355,547	415,816	856,563		
1973 MBS	NO-16		100	2,377,828	1,222,811				
1973 PT	NO-15					1972	1973	1974	1975
1973 LST	NO-16					269,055	812,097	7,004,896	
1974 MSC		CHINA	2,000	4,991,647	3,086,048	203,088	1,325,624	423,116	
1974 MSC		CHINA	380	2,952,064	1,961,828	203,088	1,325,624	423,116	
1974 MSC		FUKUE	380	2,952,064	1,961,828	29,2747	1,715,060	1,609,503	
1974 LST		SATSUMA	2,000	5,349,459	3,617,310		29,931	1,969,834	699,524
1975 MSC	OKITSU		380	4,112,737	2,949,349		29,931	1,969,834	699,524
1975 MSC	HASHIRA		380	4,112,737	2,949,349		29,931	521,110	2,162,316
1975 MSC	IWAI		380	3,970,692	2,243,417		29,931	521,110	2,162,316
1975 MSC	NEMRO		1,500	4,630,682	3,324,901		459,280	1,384,670	986,051
1975 LST						1975	1976	1977	1978
1976 MSC		HATSUSHIMA	440	5,178,024	4,239,887	226,062	1,233,983	2,728,842	
1976 AGS		FUTAM	2,000	9,401,483	7,461,893	43,3781	1,311,008	5,655,104	
1976 AOE		SAGAMI	5,000	15,316,700	12,144,972	578,213	2,731,768	8,928,991	
1977 MSC		NIOSHIMA	440	5,234,636	4,359,857	251,831	1,216,555	2,297,571	
1977 MSC	WATASHIRO		440	5,047,900	4,209,844	193,389	1,194,138	2,821,317	
1977 MRC		IMIOTOC	4,500	16,949,896	15,934,436	1,839,820	5,165,312	6,928,804	
1978 MSC		ENDOSHIMA	440	4,627,083	3,961,415	69,766	1,153,471	2,738,178	
1978 MSC		UKISHIMA	440	4,443,615	3,805,172		52,323	1,114,081	2,638,760

APPENDIX I. (cont'd)

Fiscal Year	Type	SHIP NAME	TON (Standard)	Total Real Value FY1985		Total Nominal Value (Unit: 1,000 yen)	Total Nominal Value (Unit: 1,000 yen)	Total Nominal Value (Unit: 1,000 yen)	1981	1982
				(Unit: 1,000 yen)	(Unit: 1,000 yen)					
1979 MSC	OGISHIMA	440	4,583,425	4,075,190	90,268	1,536,927	2,448,015	2,447,755		
1979 MSC	NIIJIMA	440	4,582,843	4,074,675	90,268	1,536,652	2,447,755			
1979 [SU]	YURA	500	2,227,294	1,913,014	268,982	1,704,032				
1979 [SU]	NOTO	500	2,042,009	1,753,762	201,098	1,552,664				
1979 AGS	SUMA	1,100	5,523,701	4,887,654	600,546	1,660,188	2,626,920			
1980 MSC	YAKUSHIMA	440	4,586,628	4,251,760	99,446	1,529,382	2,622,932			
1980 MSC	NARISHIMA	440	4,586,024	4,251,202	99,446	1,523,106	2,622,650			
1981 MSC	CHICHIJIMA	440	4,831,576	4,575,304	6,611	1,353,803	3,214,890			
1981 MSC	TORISHIMA	440	4,831,576	4,575,304	6,611	1,353,803	3,214,890			
1981 AS	CHIYODA	3,600	19,792,756	17,938,795	38,202	2,906,783	9,194,621	5,779,189		
1982 MSC	HAHAJIMA	440	4,723,656	4,554,980	7,356	1,289,745	3,277,819			
1982 MSC	TAKASHIMA	450	4,723,656	4,554,980	7,356	1,289,745	3,277,819			
1983 MSC	NIWAJIMA	440	4,510,432	4,543,109	7,621	1,013,527	3,521,961			
1983		440	4,610,432	4,543,109	7,621	1,013,527	3,521,961			
1983 MSC	ETAJIMA	440	4,610,432	4,543,109	7,621	1,013,527	3,521,961			
1983 AGS	WAKASA	2,000	9,044,673	8,858,549	212,908	2,267,456	6,419,084			
1984 MSC	KAMISHIMA	440	4,441,814	4,431,920	7,753	955,756	3,468,411			
1984 MSC	HIME SHIMA	440	4,441,814	4,431,920	7,753	955,736	3,468,411			
1984 AOE	TOWADA	8,300	18,901,620	16,253,902	58,379	4,545,379	14,250,144			
1985 MSC	OGISHIMA	440	4,755,414	4,827,602	11,505	1,128,591	3,637,506			
1985 MSC	MOROSHIMA	440	4,755,414	4,827,602	11,505	1,128,591	3,687,506			
1986 MSC	YURISHIMA	440	4,739,064	4,833,674	8,560	1,128,115	3,696,999			
1986 MSC	HIKOSHIMA	44C	4,736,569	4,831,129	8,560	1,125,579	3,695,990			
1986 LCU	NO-1	420	1,686,975	1,732,787	8,371	1,724,416				
1986 STS	KUROBE	2,207	14,300,585	14,585,813	39,188	1,755,481	1,279,144			
1987 MSC	AWASHIMA	490	5,070,284	5,171,690	8,841	1,116,332	4,046,517			
1987 MSC	SAKUSHIMA	490	5,070,284	5,171,620	8,841	1,116,332	4,046,517			
1987 AOE	TOKINA	8,300	19,575,901	19,967,419	52,197	4,162,888	15,754,334			
1987 AOE	HAMANA	8,300	18,909,806	19,288,002	34,762	4,083,580	15,169,660			
1988 MSC	UWASHIMA	490	6,338,990	6,619,263	11,659	1,235,354	5,372,250			
1988 MSC	IE SHIMA	490	6,329,516	6,609,372	11,659	1,233,409	5,364,304			

APPENDIX L (cont'd)

Fiscal Year	Type	SHIP NAME	TON (Standard)	Total		Nominal Value Nominal Value	1990	1991	1992
				Real Value (Unit: 1000Yen)	Total Real Value FY 1985 (Unit: 1000Yen)				
1989	MSO		1,000	15,168,080	16,295,726	192,055	2,549,857	6,802,057	6,751,757
1989	MSO		1,000	15,069,636	16,189,344	190,987	2,540,699	6,776,492	6,681,166
1989	AOS	HIBIKI	2,800	13,590,775	14,285,982	169,323	13,013,039	1,103,601	
1990	MSO		1,000	15,996,747	17,428,486	223,096	3,013,900	7,937,021	8,254,463
1990	MSO		490	6,484,507	7,042,989	10,909	1,321,350	5,710,740	
1990	PG		56	5,012,726	9,755,883	27,516	3,581,290	6,147,077	
1990	PG		50	6,300,451	6,826,907	7,320	2,156,337	4,661,250	
1990	LCU		420	1,810,816	1,937,405	8,828	1,928,577		
1990	A		2,800	13,451,779	14,412,659	165,624	13,026,773	1,220,242	
1991	MSC		490	7,046,032	7,736,274	13,053	1,525,495	6,197,726	

APPENDIX M

JMSDF SHIPBUILDING COST (by Type)

TYPE FY	SHIP NAME	REAL COST (FY1985) (1000 Yen)	Cost/Ton (FY1985) (1000 Yen)	Cost/Ton/GNP
DE				
FY1961	KITAKAMI	7,420,057	4,980	6.88E-08
1967	CHIKUGO	7,955,372	5,412	4.72E-08
1977	ISHIKARI	14,068,471	10,906	4.99E-08
1979	YUBARI	16,396,047	11,154	4.59E-08
1986	ABUKUMA	23,609,808	11,805	3.58E-08
DD				
FY1962	YAMAGUMO	10,110,612	4,932	6.87E-08
1963	TAKATSUKI	14,242,918	4,594	5.82E-08
1977	HATSUYUKI	32,894,496	11,151	5.23E-08
1983	ASAGIRI	40,359,168	11,531	4.08E-08
DDG				
FY1960	AMATSUKAZE	14,215,567	4,661	7.90E-08
1971	TACHIKAZE	31,198,660	8,104	5.80E-03
1981	HATAKAZE	62,670,571	13,624	5.11E-08
1988	GONGO	113,380,204	15,747	4.48E-08
SS				
FY1960	HAYASHIO	6,674,718	8,449	1.37E-07
1963	OSHIO	12,367,682	7,496	9.40E-08
1967	UZUSHIO	15,479,852	8,367	7.23E-08
1975	YUSHIO	28,987,971	13,176	7.08E-08
1986	HAMASHIO	31,724,905	14,100	5.25E-08

Source: Kaijōjiteitai Yosan Jimuteiyo (Kaijobakuryokanbu)

APPENDIX N
JMSDF AIRCRAFT INVENTORIES

Fixed Wing

	FY 1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
P2V-7	6	6	10	16	19	23	42	56	56	59	60	59	59	58	58	55	50	43	37	30	26
P2V																					
S2E-1																					
PV-2	16	16	16	14	60	60	59	58	58	58	56	56	56	56	56	56	56	56	47	55	
PB-6A	2	2	2	1																	
TBM	10	14	20	16	15	7	7														
PS-1																					
OTHERS	17	29	81	93	91	30	88	100	89	85	68	62	60	60	75	82	84	84	90	90	
TOTAL	39	55	73	139	185	186	191	190	215	203	202	186	178	176	177	186	185	179	191	205	211
FY 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990																					
P-2V	20	15	12	9	4	2	1														
P-2	62	70	76	80	80	80	79	78	78	76	61	48	39	28	18	18	10				
P-3C																					
S2E-1	24	24	24	25	22	17	13	10													
PS-1	15	17	17	18	19	19	19	17													
U-2E	93	90	86	85	83	87	85	91	87	87	87	87	87	87	87	87	87	87	87	87	
TOTAL	274	216	213	217	208	205	203	204	193	194	176	164	161	158	159	162					

Helicopter

	FY 1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
UH-2A																					
HSS-1																					
HSS-1N																					
S-51	3	3	3	3	3	3	3														
OTHERS	6	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
TOTAL	9	17	13	13	14	17	28	29	32	34	38	48	50	51	54	63	65	70	75	78	83
FY 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990																					
HSS-2(A)	58	61	59	57	58	56	55	50	46	38	28	22	14	9	5	2					
HSS-2B																					
SH-60J																					
OTHERS	30	32	31	33	33	34	32	32	32	32	25	29	27	28	28	31					
TOTAL	88	91	91	88	95	97	105	99	101	100	91	93	92	99	114	111					

Source: Kantei To Kokubutsu (Kaijōtairihōbunsho)

APPENDIX O
JMSDF AIRCRAFT PROCUREMENT COST

Procurement Year	Type of Aircraft	Procurement Year/Value FY 1965	Total		Nominal Value (Unit: 1000Yen)				
			Count	Sea/Value					
1965-02-17	1965-S-1	4	56,924,512	14,801,798	178,944	2,168,602	3,320,303	4,905,903	4,228,046
1965-S-5	1965-S-5	1	1,233,375	291,174	111,228	19,946			
1965-S-5A	1965-S-5A	6	2,215,750	526,062	131,516	394,546			
1965-S-6	1965-S-6	4	2,333,290	576,636		219,456	357,200		
1965-S-6A	1965-S-6A	2	798,474	196,346		76,538	117,808		
1965-S-6N	1965-S-6N	6	3,746,741	996,492		189,102	807,390		
1965-S-7	1965-S-7	3	713,678	192,653			52,695	139,398	
1965-S-8	1965-S-8	10	1,213,660	328,212			15,382	312,840	
1965-S-9	1965-S-9	3	1,913,100	522,737			158,538	374,199	
1965-S-10	1965-S-10	2	1,890,133	510,336					
1965-S-11	1965-S-11	2	770,733	208,099			71,818	136,280	
1965-S-12	1965-S-12	6	13,140,922	4,04,917			88,536	937,486	1,745,397
1965-S-13	1965-S-13	3	673,954	192,893			37,173	155,520	1,303,508
1965-S-14	1965-S-14	15	1,529,633	460,225			52,331	171,002	1,446,827
1965-S-15	1965-S-15	11	1,263,173	3,804,889			137,068	842,692	1,476,886
1965-S-16	1965-S-16	3	728,358	222,693				44,919	177,774
1965-S-17	1965-S-17	2	1,193,999	363,810				118,552	245,058
1965-S-18	1965-S-18	3	770,677	252,593					25,269
1965-S-19	1965-S-19	4	4,280,883	1,455,946					39,461
1965-S-20	1965-S-20	1	1,939,183	638,214					615,144
1965-S-21	1965-S-21	6	1,396,010	485,508					801,331
1965-S-22	1965-S-22	1	1,396,010	485,508					189,750
1965-S-23	1965-S-23	6	1,396,010	485,508					498,464
1965-S-24	1965-S-24	4	5,177,824	1,845,580	176,880	833,561	815,139		51,071
1965-S-25	1965-S-25	4	5,177,824	1,845,580	176,880	833,561	815,139		434,431
1965-S-26	1965-S-26	2	167,073	55,34	55,134				
1965-S-27	1965-S-27	1	1,956,116	710,985		183,750	321,115		
1965-S-28	1965-S-28	1	220,012	80,918		8,513	72,405		
1965-S-29	1965-S-29	4	5,495,216	2,050,388		256,486	572,900	1,221,002	
1965-S-30	1965-S-30	1	539,526	196,010		63,259	132,751		
1965-S-31	1965-S-31	3	4,369,394	18,777,525		651,532	2,722,584	5,482,032	9,921,317
1965-S-32	1965-S-32	1	1,150,147			178,393	168,888	802,886	
1965-S-33	1965-S-33	6	7,872,680	3,137,933		388,557	617,623	2,130,833	
1965-S-34	1965-S-34	2	1,120,336	422,046		136,226	285,820		
1965-S-35	1965-S-35	1	76,511	28,109		28,309			
1965-S-36	1965-S-36	2	9,165,725	4,013,640			349,781	349,782	1,236,950
1965-S-37	1965-S-37	2	5,758,725	2,402,996			209,600	935,048	1,258,348
1965-S-38	1965-S-38	2	517,172	209,712			29,492	180,229	
1965-S-39	1965-S-39	3	286,268	115,556			26,751	88,587	
1965-S-40	1965-S-40	7	813,960	3,689,380			478,703	759,228	2,452,049
1965-S-41	1965-S-41	3	1,599,193	633,537			204,339	435,193	

Source : Kaitenchihi Yosan Jimutei (Kaihobakuryokanbu)

APPENDIX 0 (CONT'D)

Fiscal Year	Aircraft	Amount	Real Value FY 1985	Nominal Value (Unit: 1000 Yen)	Total		Nominal Value (Unit: 1000 Yen)	Total		Nominal Value (Unit: 1000 Yen)
					1983	1984		1970	1971	
1962-5.5	1	36,263,399	16,859,976	1,035,733	5,287,766	9,662,477				
1969-15.17-A	1	2,661,238	1,175,036	1,048,000	515,126	555,510				
1969-2.5	2	502,719	214,620	30,535	184,155					
1969-15.2	1	8,615,834	3,828,360	505,902	1,049,804	2,272,654				
1969-5.6	1	539,016	226,208	73,166	155,042					
1969-85.1-47.5.16	50	283,633	115,232	116,232						
1970-1.2	1	35,087,704	16,671,138	1,045,268	5,759,852	9,866,018				
1970-3.5	5	27,758,115	13,167,445	946,900	4,128,380	7,591,165				
1970-5.1-WA	1	1,229,317	778,059	250,049	528,010					
1970-15.5	6	7,162,512	3,408,008	438,566	913,750	2,053,692				
1970-15.107	2	2,881,477	1,300,668	355,496	945,172					
1970-3.5-47.5.24	1	75,518	32,662	32,662						
1971-1.2	1	32,537,416	17,191,534	1,066,440	5,562,325	10,565,769				
1971-3.5	1	26,471,512	13,913,514	991,236	4,856,314	6,059,964				
1971-5.5	1	7,263,29	3,752,056	303,154	1,045,929	2,502,673				
1971-1.37	1	2,881,475	1,353,008	290,105	1,102,903					
1972-1.2	5	21,920,585	13,473,696	849,926	4,586,289	8,037,481				
1972-1.25	1	5,032,022	3,080,154	210,335	997,997	1,889,822				
1972-1.25-WA	1	4,944,515	3,050,130	236,918	894,561	1,918,651				
1972-1.25-WA	1	561	837,216	259,937	577,279					
1972-7.90	3	1,225,510	666,756	136,941	539,815					
1972-7.5.17.4	2	4,871,374	2,643,474	59,468	2,732,003					
1972-15.5.2	6	7,810,861	4,791,426	295,057	1,697,731	2,798,632				
1972-1.17	1	1,330,366	723,765	148,680	575,005					
1972-3.16	2	3,653,321	1,75,010	179,010						
1972-8.21	6	22,011,238	15,066,391	935,225	5,120,997	6,390,169				
1973-105.1	1	5,163,033	3,536,161	244,880	1,072,467	2,218,814				
1973-US.	2	9,217,867	5,302,930	496,361	1,867,562	3,949,060				
1973-1.25.2	3	3,437,308	221,537	42,354	173,343					
1973-1.25.9	1	4,135,516	266,472	53,914	212,556					
1973-15.5.2	6	8,059,002	5,312,475	343,622	1,966,222	3,202,566				
1973-1.37.3	1	1,294,214	827,042	170,147	656,895					
1973-5.6.4	1	1,218,048	834,571	60,056	237,119	537,396				
1973-1.37.6	1	160,019	89,616	89,616						
1973-1.37.2	8	3,179,354	1,604,754	1,026,327	5,425,193	9,593,264				
1974-1.2	2	9,942,676	7,324,432	503,875	2,353,324	4,487,233				
1974-1.2	3	3,554,66	249,483	48,779	200,704					
1974-KM.2	3	3,554,66	249,483	48,779	200,704					
1974-7.5.6	1	4,09,057	288,341	35,002	253,333					
1974-1.25.5	5	7,991,347	5,888,820	373,281	1,909,349	3,606,190				
1974-1.25.5	4	2,765,5	906,448	189,562	716,786					
1974-1.25.5	4	1,160,315	860,534	61,781	185,343	613,410				

APPENDIX (cont'd.)

APPENDIX (Continued)

APPENDIX G (cont'd)

Country	Year	India		Nominal Value (in million US\$)			
		1985	1994				
Argentina	1985	1.0	88.421.0	96.776.936	0	2.056.036	49.665.349
Argentina	1994	1	2.3-1.682	2.552.255	40.610	1.093.059	1.418.576
Bolivia	1985	2	89.862	959.645	101.695	858.130	
Bolivia	1994	2	633.393	746.722	46.620	694.102	
Brazil	1985	2	88.294	4.5.970	0	415.910	
Brazil	1994	4	16.226.889	17.794.176	135.719	1.351.771	10.970.141
Chile	1985	2	52.443.226	57.466.176	272.822	1.384.666	18.457.909
Chile	1994	3	8.6.4.900	9.44.162	0	774.640	8.666.522
Ecuador	1985	6	76.821.167	84.280.698	0	1.771.611	40.154.134
Ecuador	1994	7	9.1.1.16	1.073.040	121.824	956.236	
El Salvador	1985	7	2.664.563	2.905.647	183.306	2.117.841	
El Salvador	1994	7	49.952.344	55.25.647	264.065	1.417.649	17.577.197
Guatemala	1985	2	18.296.222	20.423.792	0	359.338	6.807.724
Guatemala	1994	1	6.320.332	7.046.016	52.129	208.515	6.785.372
Honduras	1985	9	3.579.192	3.934.737	258.798	3.677.939	
Honduras	1994	1	7.631.397	8.513.172	0	104.010	3.562.375
Peru	1985	5	23.055.027	25.725.830	130.065	718.444	8.785.533
Peru	1994	3	1.101.064	1.320.176	0	945.813	11.374.363
Uruguay	1985	1	5.214.884	5.794.117	46.199	461.992	4.019.332
Uruguay	1994	1					1.256.594

APPENDIX P
JMSDF SHIPBUILDING COST (by DEFENSE PROGRAM)

DEFENSE PROGRAM	TERM (Fiscal Year)	Tons/Year	Real Value/Year (10 ³ Yen)	Nominal Value/Year (10 ³ Yen)	Nominal GNP/Year (10 ⁸ Yen)	Cost/GNP/Year
3rd DBP	1967-1971	10,982	6,03E+07	2,83E+07	6,48E+05	4,35E-04
4th DBP	1972-1976	9,812	6,90E+07	5,13E+07	1,35E+06	3,80E-04
Post 4th DBP	1977-1979	12,433	7,62E+07	6,89E+07	1,25E+06	5,52E-04
MTDPE	1980-1982	13,403	9,44E+07	9,20E+07	1,56E+06	5,91E-04
MTDPE	1983-1985	16,330	9,59E+07	9,73E+07	1,83E+06	5,31E-04
MTDP	1986-1990	14,724	1,54E+08	1,65E+08	3,83E+06	4,30E-04

Source: Kaijūhōtai Yosan Jitmutelyo (Kaijūbakuryōkanbu)

APPENDIX Q
JAPAN'S GNP DATA

Fiscal Year	Nominal GNP (Unit: 10^8 Yen)	Real GNP (Unit: 10^8 Yen)
1955	86,278	437,487
1960	166,620	667,688
1961	199,000 *	735,610 *
1962	217,000 *	792,252 *
1963	256,000 *	872,270 *
1964	297,000 *	958,625 *
1965	336,730	1,027,023
1966	395,000 *	1,138,294 *
1967	462,000 *	1,262,368 *
1968	547,926	1,428,570
1969	648,907	1,601,010
1970	751,520	1,730,287
1971	828,063	1,819,459
1972	965,391	1,983,252
1973	1,166,792	2,077,445
1974	1,381,558	2,072,992
1975	1,522,094	2,156,318
1976	1,711,525	2,243,215
1977	1,900,348	2,350,044
1978	2,087,809	2,470,612
1979	2,254,018	2,606,053
1980	2,453,600	2,688,179
1981	2,603,343	2,773,674
1982	2,734,615	2,871,843
1983	2,859,973	2,957,881
1984	3,057,253	3,090,860
1985	3,253,705	3,239,592
1986	3,396,853	3,333,099
1987	3,562,636	3,497,698
1988	3,792,300	3,706,417
1989	4,058,039	3,874,782
1990	4,352,543	4,071,364
1991	4,585,991	4,208,448

Source: Economic Planning Agency (Except *)
* : Zusetsu Nihon no Zaisei (Toyokeizaishinposya)

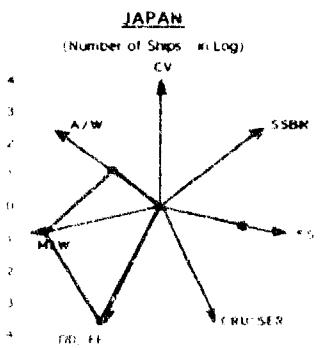
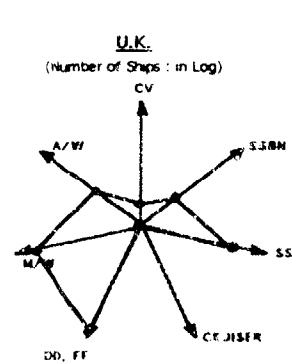
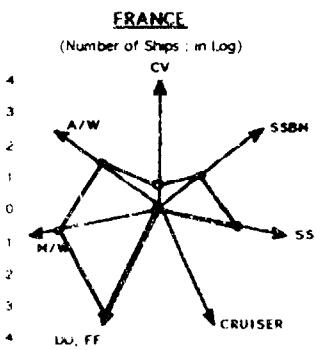
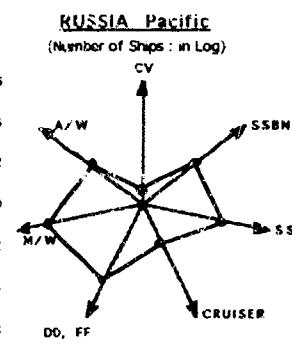
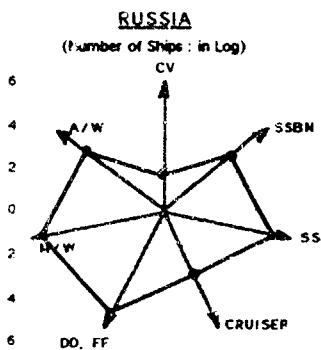
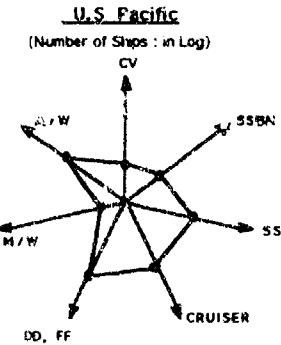
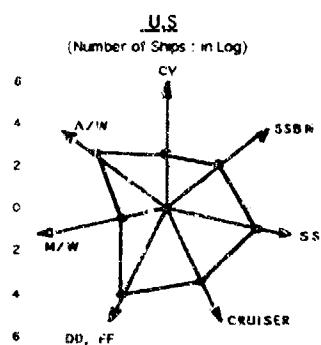
APPENDIX R
JMSDF SHIP INVENTORIES DATA

RUSSIA	U.S.			U.S.(PACIFIC)			FRANCE		
	DISPLACEMENT (FULL TON)	DISPLACEMENT QTY (FULL TON)							
SSBN	59	731,150	25	332,250	8	50,000	5	44,600	
SSGN	38	286,200					5	13,350	
SSG	12	46,200							
SSN	62	393,839	83	504,613	28	166,945			
SS	77	225,844					8	11,192	
CARRIER	5	229,500	12	1,057,784	6	526,863	2	65,560	
CRUISER	29	313,650	49	457,044	28	262,650	1	13,770	
DESTROYER	38	266,450	40	319,126	18	144,573	15	75,056	
FRIGATE	150	278,720	56	224,917	25	99,824	26	46,500	
MINE WARFARE FORCE	263	103,522	8	10,496	3	3,936	21	12,265	
AMPHIBIOUS FORCE	76	233,810	60	1,019,719	30	517,427	9	40,650	
TOTAL	869	3,108,884	333	3,925,949	146	1,872,229	92	372,393	

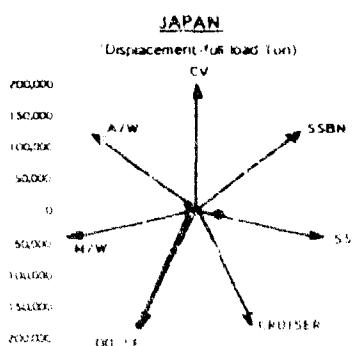
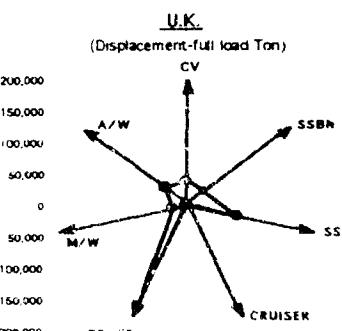
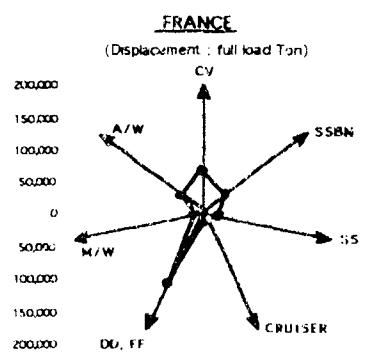
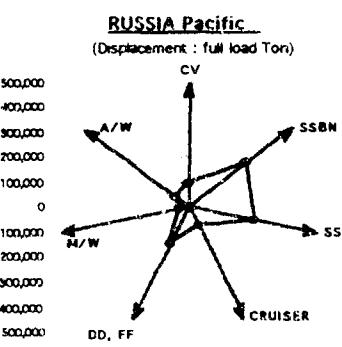
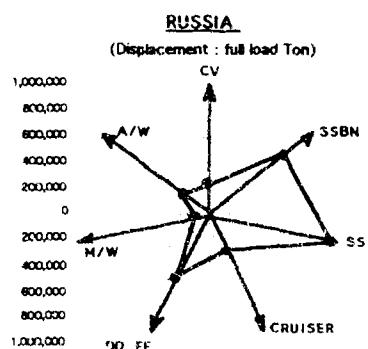
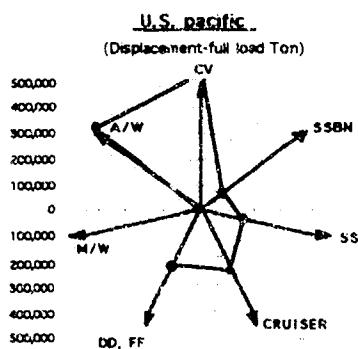
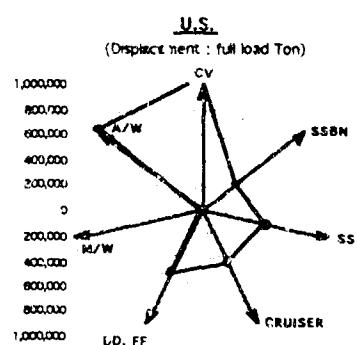
U.K.	JAPAN			U.S. Ships		
	DISPLACEMENT (FULL TON)	DISPLACEMENT QTY (FULL TON)	DISPLACEMENT QTY (FULL TON)	DISPLACEMENT QTY (FULL TON)	DISPLACEMENT QTY (FULL TON)	Homeported in Japan
SSBN	4	34,000				
SSGN						
SSG						
SSN	13	65,756				
SS	6	14,595	14	35,180		
CARRIER	2	35,000			1	80,643
CRUISER					2	18,932
DESTROYER	12	51,900	39	162,660	3	24,120
FRIGATE	30	125,124	18	35,405	3	12,300
MINE WARFARE FORCE	31	22,302	37	7,442		
AMPHIBIOUS FORCE	6	3,401	6	13,220	5	99,015
TOTAL	104	395,078	114	253,907	14	

SOURCE: JANE'S FIGHTING SHIP 1992-93

APPENDIX S
FLEET COMPOSITION
(Number of Ships in Natural Log.)

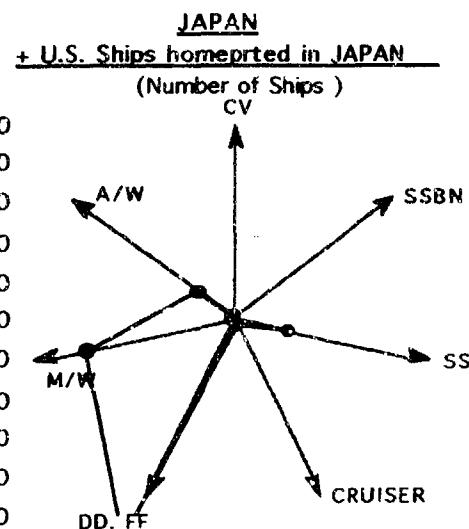
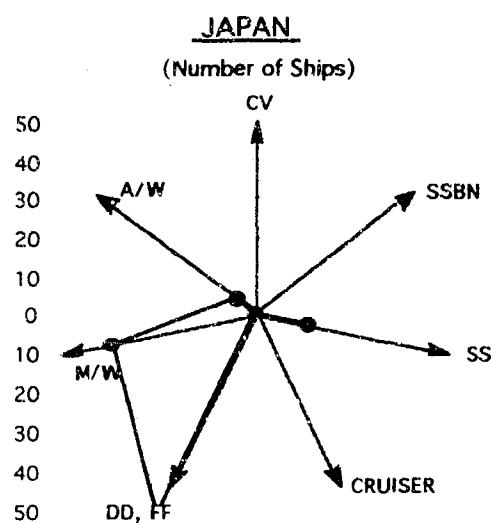


APPENDIX T
FLEET COMPOSITION (Full Load Ton)

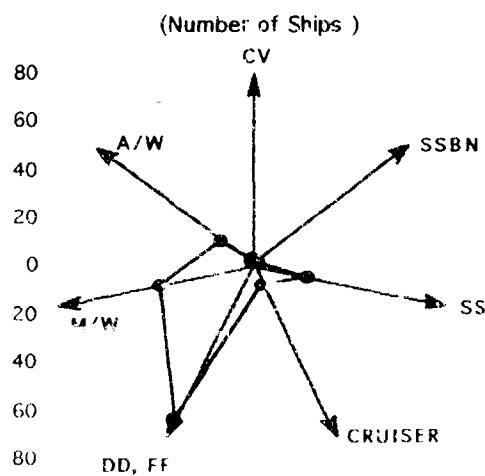


APPENDIX U

Fleet Combination Between Japan and U.S. (Number of Ships)



JAPAN + 1/3*(U.S. Pacific)



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